IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

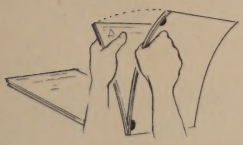
TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 514 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JAN. 1961

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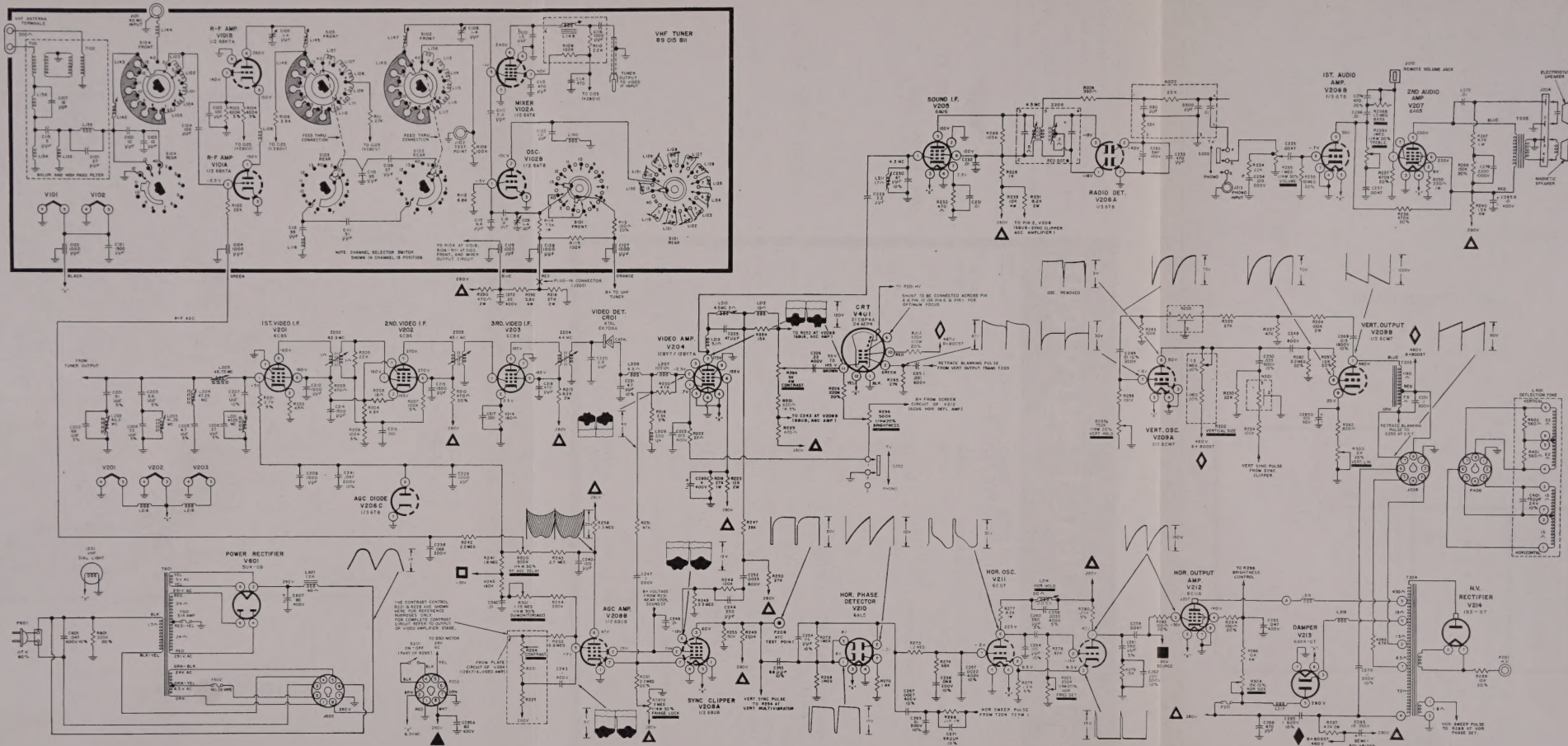
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Dumont RA-500, RA-501



DUMONT RA-500, RA-501

RA-500, RA-501 are similar to set covered in PHOTOFACT Folder 2-Set 405

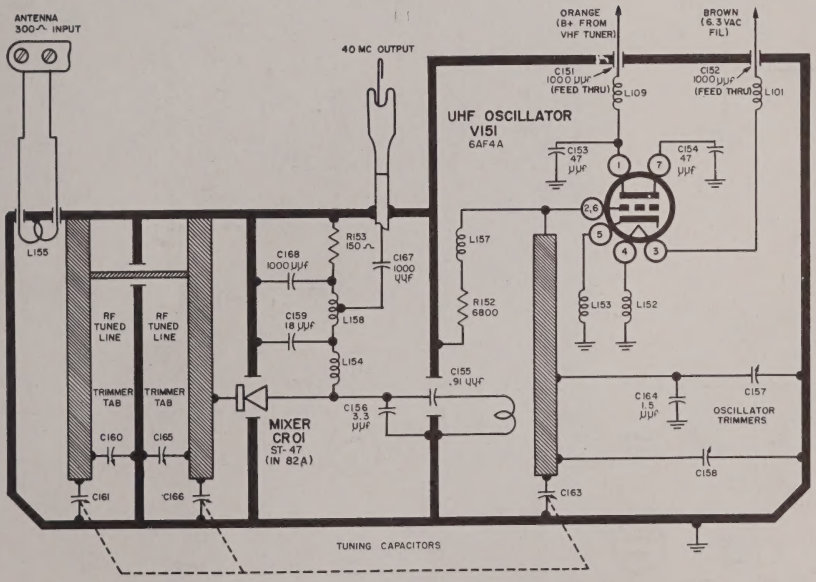
Schematic Diagram Courtesy of Allen B. Dumont Laboratories, Inc.

		1	2	3	4	5	6	7	8	9
V101	6BK7	INF	6M	0	0	.05	16K	320K	INF	0
V102	6AT8	6.5K	INF	0	0	.05	16K	110K	0	100K
V201	6CB6	3.8M	47	.05	0	60K	60K	0	.....	.....
V202	6CB6	80K	60K	.05	0	15K	15K	60K	.....	.....
V203	6CB6	.1	190	.05	0	22K	22K	0	.....	.....
V204	12BY7A	27	100*	0	.05	.05	0	20K	16K	0
V205	6AU6	1.7	0	.05	0	25K	25K	470	.....	.....
V206	6T8	INF	33K	INF	0	.05	3.8M-4.2M	0	10M	.....
V207	6AQ5	470K	220	0	.05	15.5K	15.5K	470K	.....	.....
V208	6BU8	0	32K	68K	0	.05	3.3M	2.2M	2.7M	4M
V209	6CM7	INF	NC	0	0	.05	INF	470K-1.2M	2.2M	820-2.8K
V210	6AL5	1M	2M	.05	0	1M	0	1.8K	.....	.....
V211	6CG7	120K	80K-280K	1.3K	.05	0	22K	3.2M	1.3K	0
V212	6CU6	NC	.05	NC	25K-40K	4.5M	NC	0	0	.....
V213	6AX4-GT	NC	NC	INF	.....	14K	.....	0	.05	.....
V214	1B3GT	NC	INF	NC	NC	NC	INF	INF	NC	.....
V401†	CRT	0	27K	NC	NC	NC	0 or INF	NC	NC	NC
V601	5U4GB	NC	15K	NC	24	NC	24	NC	15K	.....

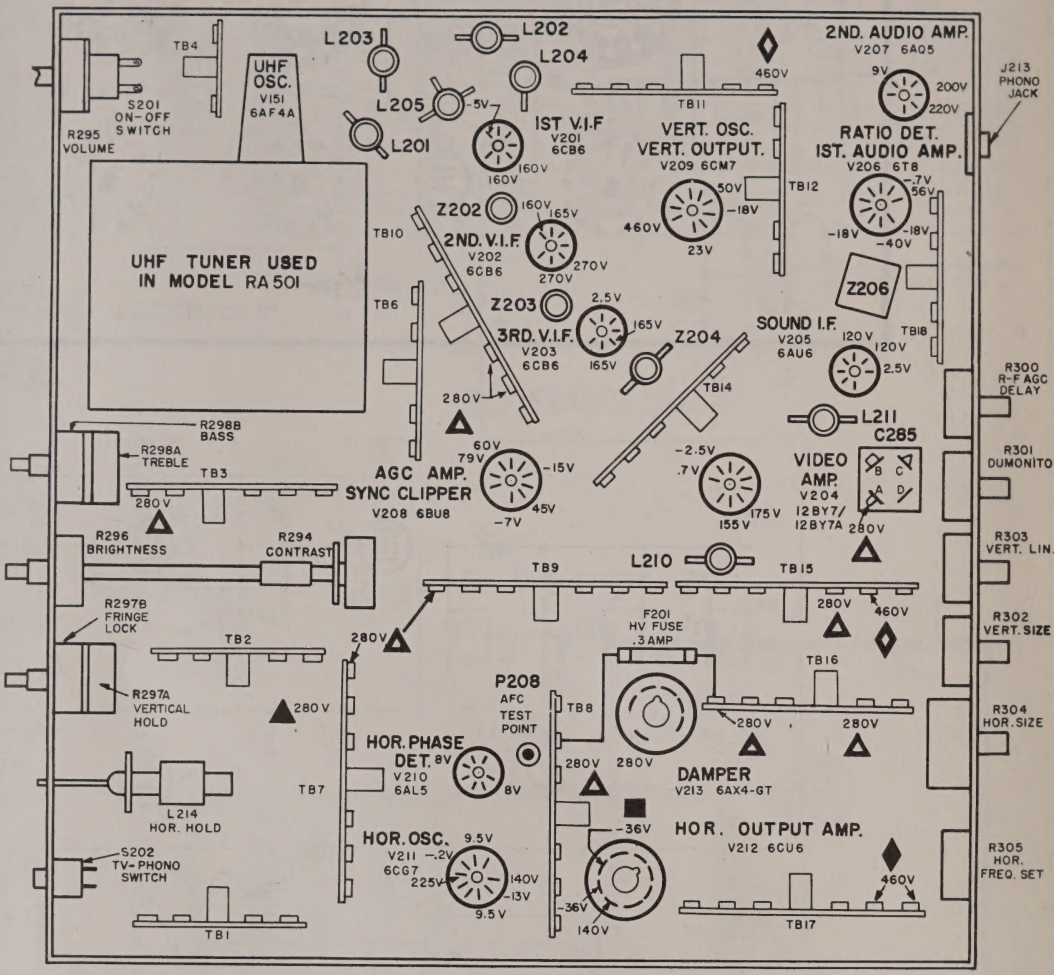
†10	11	12	12
INF	220K-380K	.05	.05

*Reading depends upon crystal video detector and VTVM scale used.

RESISTANCE CHART



UHF TUNER 89014455



UNDERCHASSIS VOLTAGE POINTS

PHOTOFACT® Folder with CIRCUITRACE®

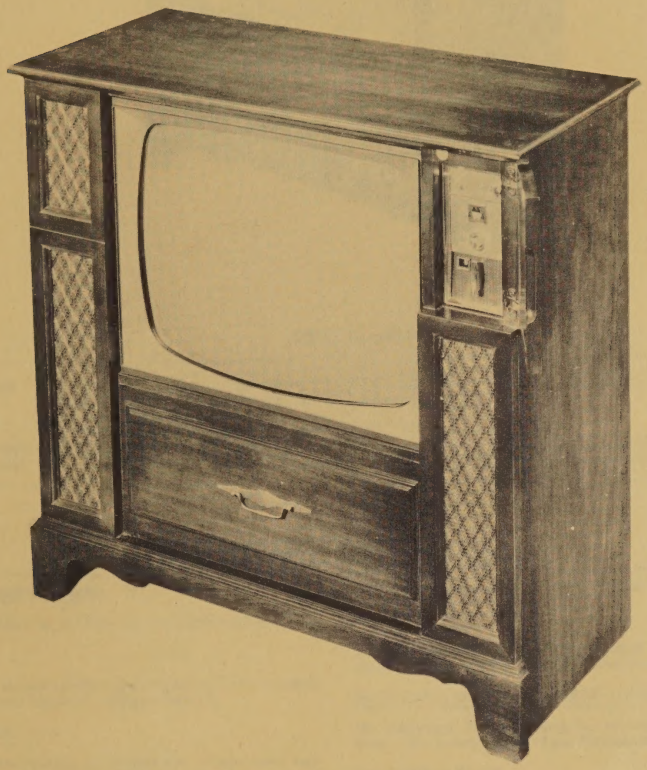
AIRLINE MODELS WG-5203A, -5205A, -5213A, -5303A, -5305A, -5313A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS WG-5203A, -5205A, -5213A, -5303A, -5305A, -5313A



MODEL WG-5203A

AIRLINE MODELS WG-5203A, -5205A, -5213A, -5303A, -5305A, -5313A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

AIRLINE MODELS WG-5203A, -5205A, -5213A, -5303A, -5305A, -5313A

AIRLINE MODELS WG-5203A, -5205A, -5213A, -5303A, -5305A, -5313A

MODEL WG-5203A

TRADE NAME	AIRLINE Models WG-5203A, WG-5205A, WG-5213A, WG-5303A, WG-5305A, WG-5313A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Seventeen, UHF - Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING VHF - 180 Watts, 1.75 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE

A fuse wire is used for filament protection, (For location, see M3 in photo "Chassis - Bottom View".)

FUSE DEVICE

A 4.5Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator, it is necessary to remove rear cover.

AGC

The AGC may be varied by means of an AGC Range Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube (thru 100K resistor) to various voltage points. (For location, see photo "Chassis - Top View".)

SYNC STABILITY

Sync stability may be varied by means of a Sync Stability Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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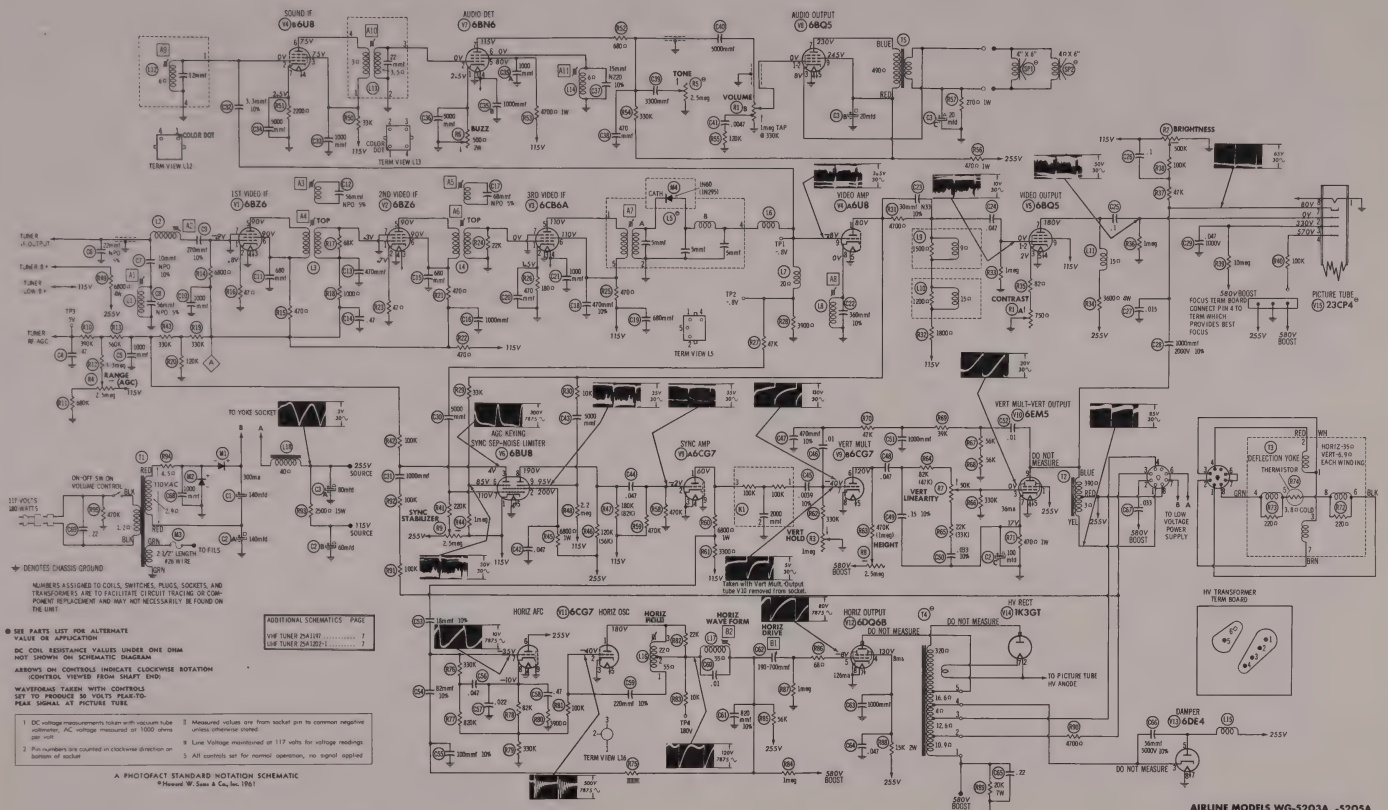
KA418

DATE 1-61 SET 514 FOLDER 1

SET 514 FOLDER 1


SOUND IF
V9 6U8
AUDIO DET
V7 6BN6
AUDIO OUTPUT
V8 6BQ5
1ST VIDEO IF
V1 6BZ6
2ND VIDEO IF
V2 6BZ6
3RD VIDEO IF
V3 6CB6A
VIDEO AMP
V4 6U8
VIDEO OUTPUT
V6 6BQ5
TUNER RF AGC
RANGE (AGC)
TO YOKE SOCKET
AGC KEYING
SYNC SEP-NOISE LIMITER
V5 6BU8
SYNC AMP
V9 6CG7
VERT MULT
V5 6CG7
VERT MULT-VERT OUTPUT
V10 6EM5
VERT LINEARITY
HEIGHT
DO NOT MEASURE
BRIGHTNESS
CONTRAST
PICTURE TUBE
V13 23CP4
SYNC STABILIZER
HORIZ AFC
V11 6CG7
HORIZ OSC
HORIZ HOLD
HORIZ WAVE FORM
HORIZ DRIVE
HORIZ OUTPUT
V12 6DQ6B
HV RECT
V14 1K3GT
TO PICTURE TUBE HV ANODE
DAMPER
V13 6DE4
TERM VIEW L2
TERM VIEW L3
TERM VIEW L5
TERM VIEW L36
TERM VIEW L1
TERM VIEW L4
TERM VIEW L6
TERM VIEW L7
TERM VIEW L8
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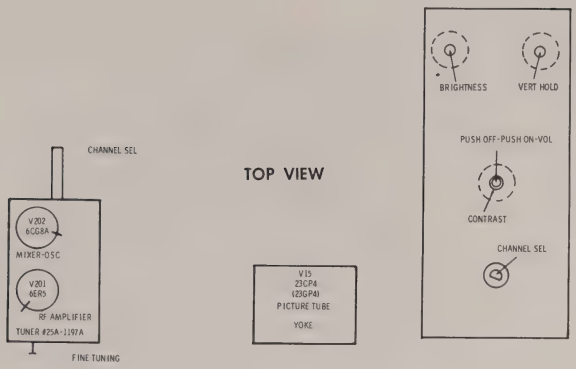
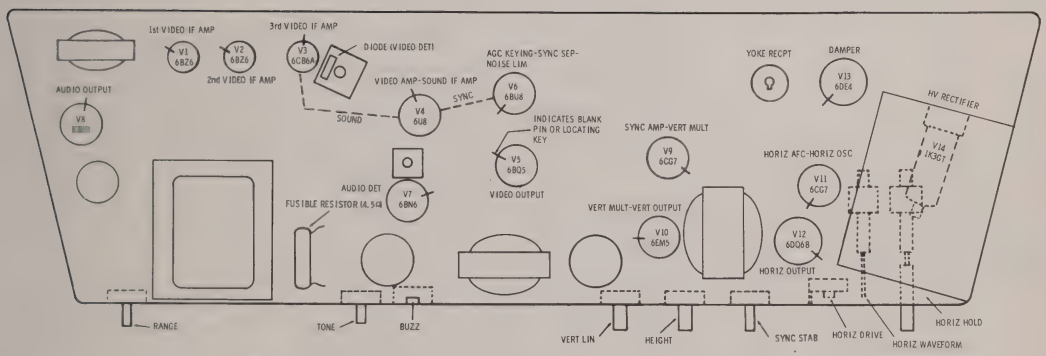
TERM VIEW L29
TERM VIEW L30
TERM VIEW L31
TERM VIEW L32
TERM VIEW L33
TERM VIEW L34
TERM VIEW L35
TERM VIEW L36
HV TRANSFORMER TERM BOARD
DEFLECTION YOKE THERMISTOR
TO VOLTAGE POWER SUPPLY
ON-OFF SW ON VOLUME CONTROL
117 VOLTS 180 WATTS
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 25A1197 7
UHF TUNER 25A1202-1 7
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
*Howard W. Sams & Co., Inc. 1961
AIRLINE MODELS WG-5203A, -5205A, -5213A, -5303A, -5305A, -5313A

TUBE PLACEMENT CHART





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (4.5Ω), Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, Rectifiers (B+)
Vert. off freq. V9, V10
Horiz. off freq. V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V5, V15
Has pic, no sound V4, V7, V8
Overloaded picture V6

SYNC FAILURE
No vert. sync V6, V9
No horiz. sync V6, V9
No vert. or horiz. sync V6, V9

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8505L or 9295
WALSCO #2543, 2544 or 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp.)	47.25MC	Any non-interfering channel	Vert. Amp. thru demodulator probe (Fig. 1) to pin 5 (plate) of 6BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC 45.75MC 47.25MC	"	"	A2, A3, & Mixer Plate Coil	Adjust for response similar to Fig. 2. Mixer Plate Coil and A2 affect the shape of the top. A3 is adjusted to position the 47.25MC marker.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to TP-1. Low side to chassis. DC probe of VTVM thru 10K to same point. Common to chassis. (Across Video Det. Load)	A4	Increase bias at point (A) to 4.5 volts. Adjust sweep output for -2 volts DC at TP-1. Adjust A4 for maximum amplitude at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM amplitude at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A2 thru A7 for desired response. A7 controls the symmetry of the top. A6 controls position of the 45.75MC marker. A4 controls position of the 42.4MC marker (this slug will seldom need retouching). CAUTION: The position of 44.5MC marker is very critical (98%).

4.5MC TRAP ALIGNMENT

Use 0-10 volts AC scale on VTVM.
Set Contrast fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.005mfd	High side to pin 9 (grid) of 6U8 (V4). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	RF probe to pin 2 (grid) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV signal and reduce signal level at the antenna terminals, by use of an attenuator or similar device, until a hiss similar to super-regeneration is heard in the sound.
Adjust A9, A10 and A11 for maximum undistorted sound.
Adjust the Buzz Control for MINIMUM buzz.

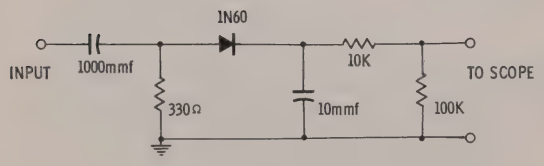


FIG. 1

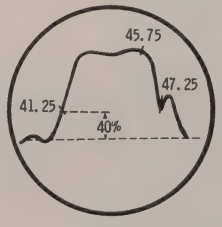


FIG. 2

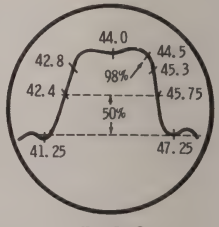
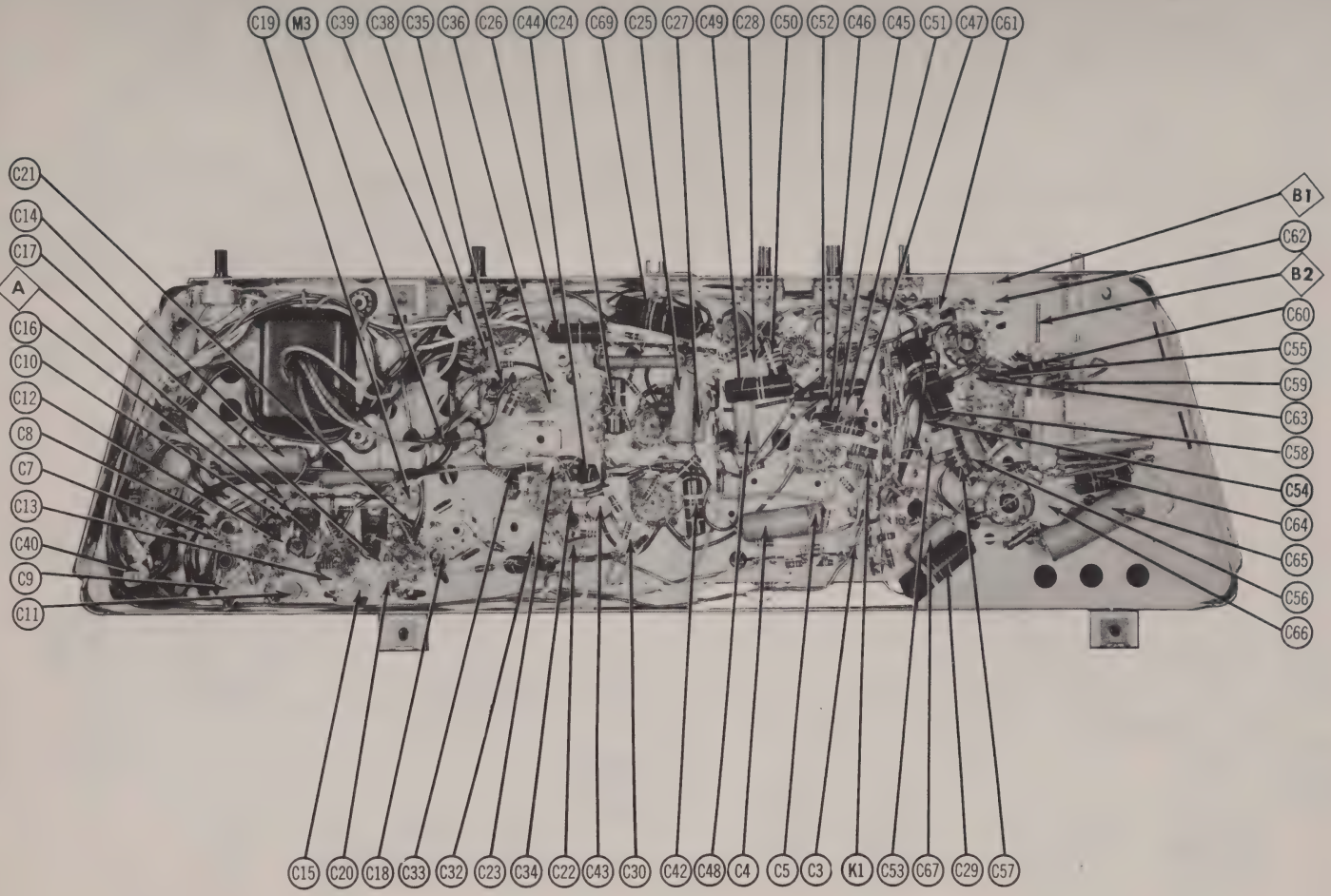
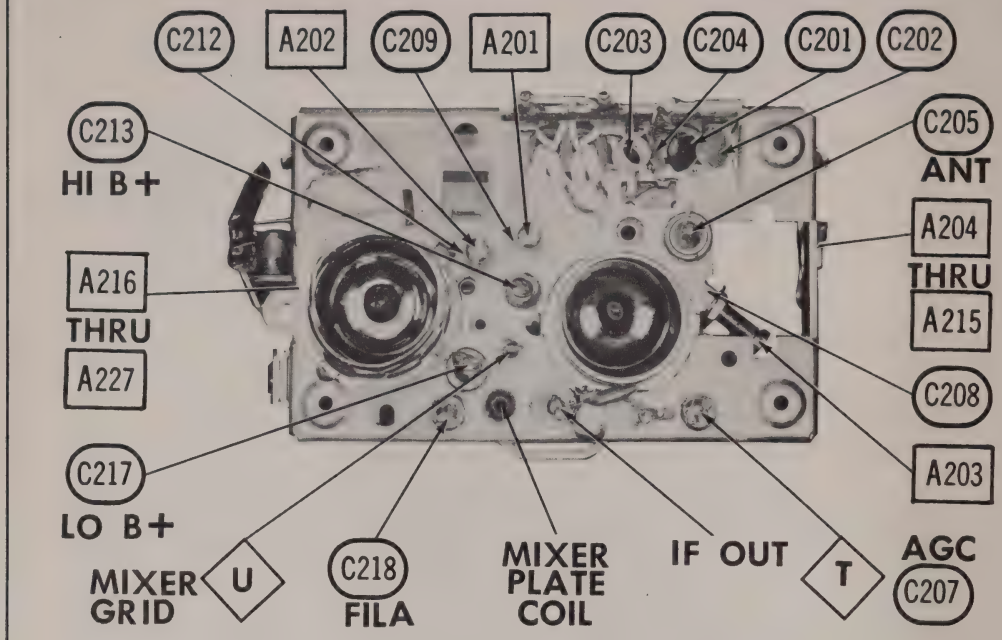


FIG. 3

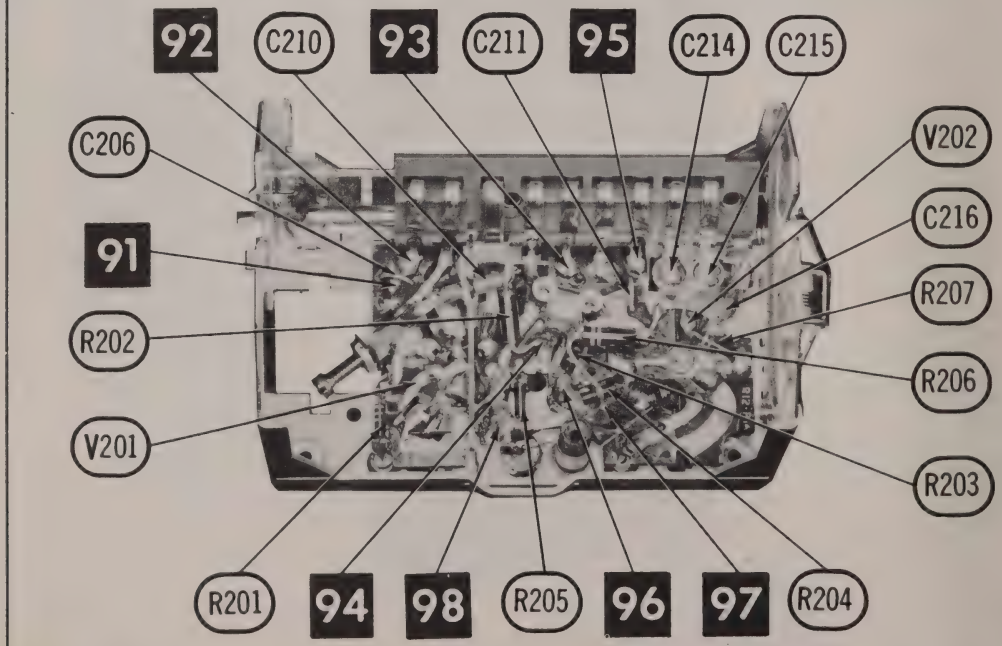


CHASSIS BOTTOM VIEW-CAPACITOR, MISC, & ALIGN IDENT.

AIRLINE MODEL WG-5203A, -5205A,
-5213A, -5303A, -5305A, -5313A



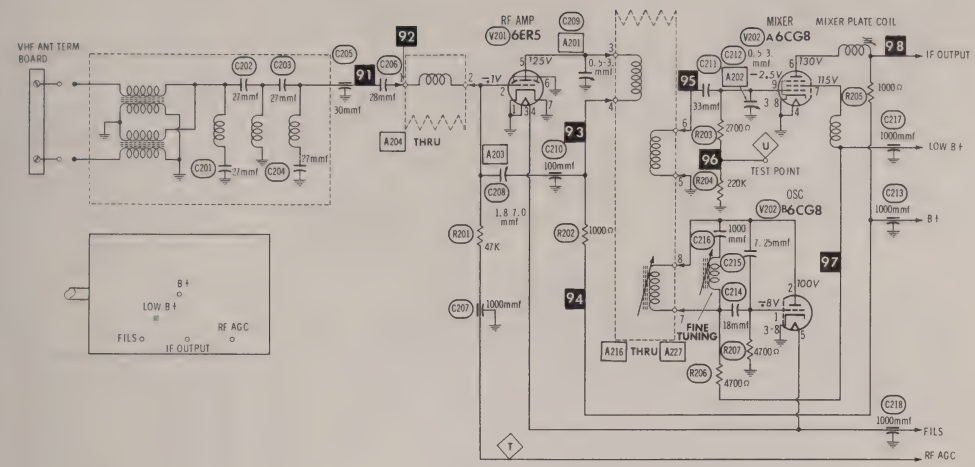
VHF TUNER 25A1197-TOP VIEW



A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER 25A1197-BOTTOM VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE
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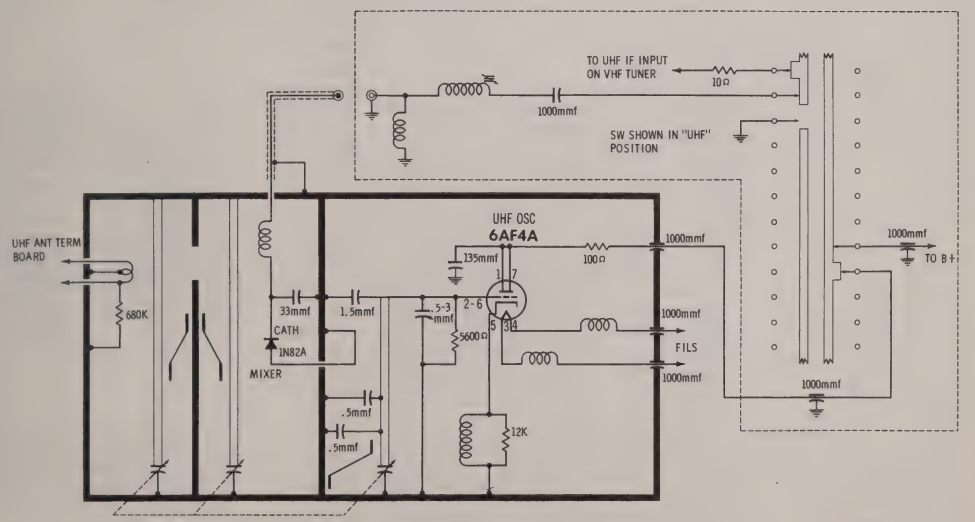
VHF TUNER 25A1197



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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UHF TUNER 25A1202-1 & UHF POSITION SWITCH

SET 514 FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC * USE	TYPE	ITEM No.	RAYTHEON * SYLVANIA * USE	TYPE
V1	1st Video IF Amp	6BZ6	V8	Audio Output	6BQ5
V2	2nd Video IF Amp.	6BZ6	V9	Sync Amp. - Vert. Mult.	6CG7
V3	3rd Video IF Amp.	6CB6A	V10	Vert Mult. - Vert. Output	6EM5
V4	Video Amp. - Sound IF Amp	6U8	V11	Horiz. AFC - Horiz. Osc.	6CG7
V5	Video Output	6BQ5	V13	Horiz. Output	6DQ6B
V6	Noise Limiter	6BU8	V13	Damper	6DE4
V7	Audio Detector	6BH6	V14	HV Rectifier	1B3GT

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No	SYLVANIA PART No.	NOTES
V15	23CP4 23GP4	23CP4 ①	23CP4 ①		23CP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	VOLT	REPLACEMENT DATA: AIRLINE PART No.	ALLOYCOIL PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	140	150	45X42	AF8SR-23	EA2081	FP17	TMS-1270	TVL-1438	
C2A	▣140	150	45X464	AF83-167-15	D060B	FP350-38	TMT-3410	TVL-3709.3	
B	▣ 80	350			BR6035	TC68	TD-150-150*	TVA-1422	
C	▣100	50							
C3A	▣ 80	350	45X465	AF84-07	C0370	FP333.15	TMT-3763	TVL-3793	
B	▣ 80	350							
C	▣ 20	50							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.47	200V		P388N-47	CUBAP47	3DP-5-474	GEM-2047	2TM-P47
C5	1000			BPD-001	BYA101E	CCD-103	B-210	5HK-D10
C6	33	NPO 5%			DTE-33	CM-199-33KJ	CNO-493	10TCC-Q33
C7	10	NPO 10%		NPO-DZ 10	DTE-10	CD6C	CCTO-100	CNO-410	10TCC-Q10
C8	56	NPO 5%			CD6C56J	CM-199-56KJ	CNO-456	10TCC-Q56	
C9	270	10%		DI-270	DD-271	L07T27	CCD-271	GP337	10TS-T27
C10	1000			BPD-001	BYA101E	CCD-101	B-210	5HK-D10	
C11	680			BPD-0006S	BYA107S8	CCD-681			10TS-T68
C12	56	NPO 5%			TCS-56	CD6C56C	CM-199-56KJ	CNO-456	10TCC-Q56
C13	470			BPD-0004T	BYA074T	CCD-471	B-347		10TS-T47
C14	.47	200V		P388N-47		3DP-5-474	GEM-2047	2TM-P47	
C15	680			BPD-0006S	DD-681	BYA107S8	CCD-681	B-358	10TS-T68
C16	1000			BPD-001	DD-102	BYA101E	CCD-103	B-210	5HK-D10
C17	56	NPO 5%			DTE-56	CD6C56C	CM-199-56KJ	CNO-456	10TCC-Q56
C18	470	10%		DI-470	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C19	680			BPD-0006S	DD-681	BYA107S8	CCD-681	B-358	10TS-T68
C20	470			BPD-0004T	DD-471	BYA074T	CCD-471	B-347	10TS-T47
C21	1000			BPD-001	DD-102	BYA101E	CCD-103	B-210	5HK-D10
C22	1000					SR3T36 *	CM-199-361K		MS-336
C23	30	N33 10%	Pt. #47X389						
C24	.047	400V		P488N-047	DD-473	CUBAS47	4DP-3-473	GEM-4147	4TM-S47
C25	.1	600V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C26	.1	200V		P388N-1	DF-104	CUB3P1	3DP-5-104	GEM-201	4TM-P10
C27	.015	600V		P488N-015	DD-153	CUBS815	8DP-3-153	GEM-6115	6TM-S15
C28	1000	2000V	Pt. #80X398-1						
C29	0.47	1000V		P1088N-047		CUB10847	16DP-5-473	GEM-10047	10TM-S47
C30	5000			BPD-005	DD-502	BYA105D	CCD-502	B-250	5HK-D50
C31	5000			BPD-005	DD-502	BYA105A	CCD-502	B-250	5HK-D50
C32	3.3	10%		NPO-BI 3.3	TCZ-3R3	C10Y33C	CCTO-3R3	CNO-533	10TCC-V33
C33	5000			BPD-005	DD-502	BYA105E	CCD-502	B-250	5HK-D50
C34	5000			BPD-005	DD-502	BYA105D	CCD-502	B-250	5HK-D50
C35A	1000			BPD-XD001	DDS-103	BYDD01E	CCD-103	B2X250	5HK-DZ10
B	1000						CCD-103		
C36	5000			BPD-005	DD-502	BYA105E	CCD-502	B-250	5HK-D50
C37	15	N330 10%	Pt. #47X378						
C38	470			BPD-0004T	DD-471	BYA107T47	CCD-471	B-347	10TS-T47
C39	3300			BPD-0033	DD-332	BYA105D33	CCD-332	B-303	5HK-D33
C40	5000			BPD-005	DD-502	BYA105E	CCD-502	B-250	5HK-D50
C41	0.047	400V		P488N-0047	DE-473	CUBSD47	5DP-1-473	GEM-4247	5TM-D47
C42	.047	400V		P488N-047	DD-503	CUBS847	4DP-3-473	GEM-4147	4TM-S47
C43	5000	400V		BPD-005	DD-502	BYA105E	CCD-502	B-250	5HK-D50
C44	.047	400V		P488N-047	DD-503	CUBS847	4DP-3-473	GEM-4147	4TM-S47
C45	0039	400V		P594CM-0039		DPM3E039	6DP-1-392	JL-239	6PE-D39
C46	.01	600V		P488N-01	DE-103	CUB4E	4DP-1-103	GEM-41	4TM-E10
C47	470	10%		DI-470	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C48	.047	600V		P488N-047	DD-503	CUBS847	8DP-3-473	GEM-6147	6TM-S47
C49	15	300V 10%		V34C2S15-10%		PM3P15	3DP-3-154	GEM-3015	2TM-P15
C50	033	300V 10%		V34C2S33-10%		PM6S33	6DP-3-333	GEM-1633	6TM-S33
C51	1000			BPD-001	DD-103	BYA101E	CCD-103	B-210	5HK-D10
C52	.01	600V		P488N-01	DE-103	CUB6E	6DP-2-103	GEM-611	6TM-S10
C53	15	10%		1689-00008	TCZ-15	22R5Q15	CM-199-150K	CNO-482	MS-415
C54	82	10%		1689-00082	TCZ-82	22R5Q82	CM-199-820K	CNO-482	MS-482
C55	100	10%		1689-00071	TCZ-100	22S771	CM-199-101K	MC2S25	MS-310
C56	.047	200V		P388N-047	DD-503	CUBS847	4DP-3-473	GEM-4147	2TM-S47
C57	.033	200V		P388N-033	DD-333	CUBS833	4DP-3-333	GEM-4133	4TM-S33
C58	.47	200V		P388N-47		CUBP47	3DP-5-474	GEM-2047	2TM-P47
C59	220	10%		1689-00052	TCZ-220	22R1T22	CM-199-221K	CNO-322	MS-322
C60	.01	600V		P488N-01	DE-103	CUB4E	4DP-1-103	GEM-411	4TM-E10
C61	120	10%		1689-00062		5R5T83	CM-199-121K	MC2S21	MS-382
C62	180-700		Pt. #47A378				460		
C63	1000			BPD-001	DD-102	BYA101E	CCD-103	B-210	5HK-D10
C64	.047	400V		P488N-047	DD-503	CUBS847	4DP-3-473	GEM-4147	4TM-S47
C65	.25	600V		P668N-22		CUB6P25	6DP-5-254	GEM-5022	6TM-P22
C66	56	500V 10%	Pt. #47X755					DLT-456	
C67	.033	600V		P668N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C68	1000			BPD-001	DD-102	BYA101E	CCD-103	B-210	5HK-D10
C69	22	400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	78X36	F1-2				Contrast
B	1meg			RPE-57	RTV-724	QJ-1819	UF4188-5	Volume
	330K Tap							
C	Switch			Not Req.	—	—	—	Push-Push Off-On
R2A	500K	½	40X483	B-59	A47-500K-S	QJ-133	U50	Brightness
B	Shaft			Not Req.	F3-3	Not Req.	Not Req.	
R3A	1meg	½	40X435	B-58	A47-1meg-S	QJ-137	U54	Vert. Hold
B	Shaft			Not Req.	F3-3	Not Req.	Not Req.	
R4	2.5meg	½	40X466-2	TT-83	B47-2.5meg-S	HLC3	BU-565	Range (AGC)
R5	2.5meg	½	40X466-2	TT-83	B47-2.5meg-S	HLC3	BU-565	Tone Note 1
R8	500Ω	½(WW)	40X473			HLC-500	HU-800	Buzz
R7A	50K	½	40X467-3	TT-81	B47-50K-S	BH-133	PTA54L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6	2.5meg	½	40X466-2	TT-83	B47-2.5meg-S	HLC3	BU-565	Height
R9	2.5meg	½	40X466-2	TT-83	B47-2.5meg-S	HLC3	BU-565	Sync Stabilizer

Note 1 Some versions may use 100K, (Part #40X468-3).
† "CONCENTRKITT" Equivalent: K-18 Kit with Base Elements and Shafts: B11-105, P17-113 (Panel) B13-137X, R23-205 (Rear)
■ "STA-LOC" Equivalent: FA75IL, RUP167264, OF1437.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R10	390K	
R11	680K	
R12	3.3meg	
R13	560K	
R14	6800Ω	
R15	470Ω	
R16	47Ω	
R17	68K	
R18	1000Ω	
R19	330K	
R20	120K	
R21	470Ω	
R22	470Ω	
R23	47Ω	
R24	22K	
R25	470Ω	
R26	180Ω	
R27	47K	
R28	390Ω	
R29	33K	
R30	10K	
R31	4700Ω	
R32	1800Ω	
R33	1meg	
R34	3600Ω 4W	Pt. #43X331 (IRC #PW5-3600Ω)
R35	▣	
R36	1meg	
R37	47K	
R67	100K	

ITEM No.	RATING	REMARKS
R39	10meg	
R40	100K	
R41	220K	
R42	100K	
R43	330K	
R44	1meg	
R45	6800Ω 1W	
R46	120K	
R47	180K	(56Ω) *
R48	2.2meg	(82Ω) *
R49	6800Ω 4W	Pt. #43X344 (IRC #PW5-6800Ω)
R50	33K	
R51	2200Ω	
R52	680Ω	
R53	4700Ω 1W	
R54	330K	
R55	120K	
R56	470Ω 1W	
R57	270K 1W	
R58	470K	
R59	470K	
R60	5600Ω 1W	
R61	330K	
R62	330K	
R63	470Ω	(1meg) *
R64	82K	(47K) *
R65	22K	(33K) *
R66	330K	
R67	56K	

ITEM No.	RATING	REMARKS
R68	56K	
R69	39K	
R70	47K	
R71	470Ω 1W	
R73	220Ω	
R75	220K	
R76	330K	
R77	820K	
R78	82K	
R79	330K	
R80	3900Ω	
R81	100K	
R82	22K	
R83	10K	
R84	1meg	
R85	56K	
R86	68Ω	
R87	1meg	
R88	15K 2W	
R89	20K 7W	Pt. #43X354 (IRC #PW10-20KJ)
R90	4700Ω	
R91	100K	
R92	100K	
R93	2500Ω 15W	Pt. #43X313 (IRC #WH5.6
R94	4.5Ω	Pt. #43X398
R95	470K	

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	47.25MC Trap	9A2401	TV-153	6225	RTC-8556	① Includes Complete Assembly.
L2	1st Video IF	9A2365	TV-131	6226	RTC-8626	② Wound on 15000Ω Resistor.
L3A	2nd Video IF	9A2363		6223	RTC-8553	③ Wound on 12000Ω Resistor.
B	47.85MC Trap					
L4A	3rd Video IF	9A2414		6224	RTC-8552	
B	41.25MC Trap					
L5A	4th Video IF	9A2370 ①				
B	Peaking (30uh)		TV-180	6176	RTC-8592	
L6	Peaking (30uh)	9A2375	TV-180	6176	RTC-8592	
L7	Peaking (36uh)	36A34	TV-190	6134	RTC-8578	
L8	4.5MC Trap	9A2074	TV-151	1470	RTC-8603	
L9	Peaking (60uh)	36A16 ②	TV-181 ④	6172 ▲	RTC-8590 ▲	▲ Parallel with 15000 Resistor.
L10	Peaking (190uh)	36A49 ③	TV-197 ▲	6154 ▲	RTC-8596 ▲	▲ Parallel with 12000 Resistor.
L11	Peaking (190uh)	36A2	TV-197	6154	RTC-8596	
L12	1st Sound IF	9A3434	TV-184	1470-A	RTC-8604	
L13	2nd Sound IF	9A2368	TV-113	6203	RTC-8545	
L14	Quadrature	9A2371	TV-121	1403	RTC-8605	
L15	RF Choke (1.5uh)	9A2380	BC-552	4604	RTC-8516	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L16	Horiz. Osc.	9A2481	MWC-12	6315	QRC104	RTC-8628	H3-8	WLC-3
L17	Horiz. Waveform	9A2372						

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L18	.300A	40Ω	1 Hy.	52X104		C-3343 ①	26C44	C-28X	① Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	SEC. 1	SEC. 2	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V	110V	6.3V	53X363	—			R-42BA	
	▣ 1.75A	▣ 1A AC	② 9A						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	51X309					A-140X	
T3	Yoke (Horiz. 15.8MH)	9A-2476 ①						
	10^{10} (Vert. 13.6MH)							
	Yoke Clamp	30X828						
T4	Horiz. Output	53X382A					D-183 * ②	
	Alt. Horiz. Output	53X382						

① Included Rear Cover and Centering Device.
② Terminals #5, #6 and #7 not used. Cut out high voltage cage or cut and tape Terminals #5, #6 and #7.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5					1
4					2
3					4
2					5
1					8

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6300Ω	3-4Ω	51X308	A-3026	A-3850 ①	34S51 ①	S-46X	① Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	8-3Ω	12A586A	46A126.4	* May be used in some versions.
SP2	4" x 6"	PM	8-3Ω	12A586A	46A126.4	
	4" x 6"	PM		12A586 *		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K1	Vert. Integrator	2000mmf▣ 100K, 100K*	76X19	

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: AIRLINE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.300A	96X23 *	1N1763 *	40H *	SR500 *	* Silicon
M2	.300A	96X23 *	1N1763 *	40H *	SR350 *	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: AIRLINE PART No. FUSE	AIRLINE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	2½" length #26 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: AIRLINE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N60 or 1N295			1N60 1N295	1N60 1N295	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M5	Tuner	25A1197	VHF with UHF Provisions (STANDARD COIL REPLACEMENT #GG420A)
	Tuner	25A1202-1	UHF

AIRLINE MODELS WG-5203A, -5205A, -5213A, -5303A, -5305A, -5313A

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	10A1005-2	VHF Channel Selector
Knob	9A998-2	UHF Channel Selector
Knob	9A999-1	UHF Channel Indicator
Knob	10A1004	Fine Tuning
Knob	10A932-1	Volume
Knob	10A933-1	Contrast
Knob	10A1006-1	Brightness, Vertical Hold
Knob	10A1018-1	Horizontal Hold

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TUNER PARTS LIST AND DESCRIPTIONS

25A1197

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6ER5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	• REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	28							
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7.0			829-7				
C209	0.5-3.0			829-3		CV-1	CT565	
C210	100		EF-0001	MFT-100				
C211	33							
C212	0.5-3.0			829-3		CV-1	CT565	
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	18							
C215	7.25							
C216	1000		DI-1000	DD-102	L10D1	CCD-102	GP210	10TS-D10
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	2700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	1000Ω	
R206	4700Ω	

ITEM No.	RATING	REMARKS
R207	4700Ω	

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage Lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201, A202, A203 .... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a variable bias supply to point (T) . Positive to chassis. Set bias for 2.5 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U) . Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A205	
		201MC	199.25MC 203.75MC	11		A206	
		195MC	193.25MC 197.75MC	10		A207	
		189MC	187.25MC 191.75MC	9		A208	
		183MC	181.25MC 185.75MC	8		A209	
		177MC	175.25MC 179.75MC	7		A210	
		85MC	83.25MC 87.75MC	6		A211	
		79MC	77.25MC 81.75MC	5		A212	
		69MC	67.25MC 71.75MC	4		A213	
		63MC	61.25MC 65.75MC	3		A214	
		57MC	55.25MC 59.75MC	2		A215	

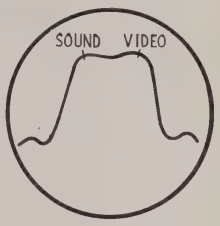


FIG. 201

VHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. Load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A217	
		201MC	199.25MC 203.75MC	11		A218	
		195MC	193.25MC 197.75MC	10		A219	
		189MC	187.25MC 191.75MC	9		A220	
		183MC	181.25MC 185.75MC	8		A221	
		177MC	175.25MC 179.75MC	7		A222	
		85MC	83.25MC 87.75MC	6		A223	
		79MC	77.25MC 81.75MC	5		A224	
		69MC	67.25MC 71.75MC	4		A225	
		63MC	61.25MC 65.75MC	3		A226	
		57MC	55.25MC 59.75MC	2		A227	

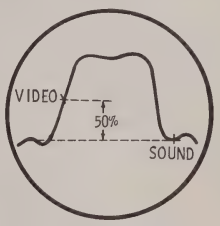
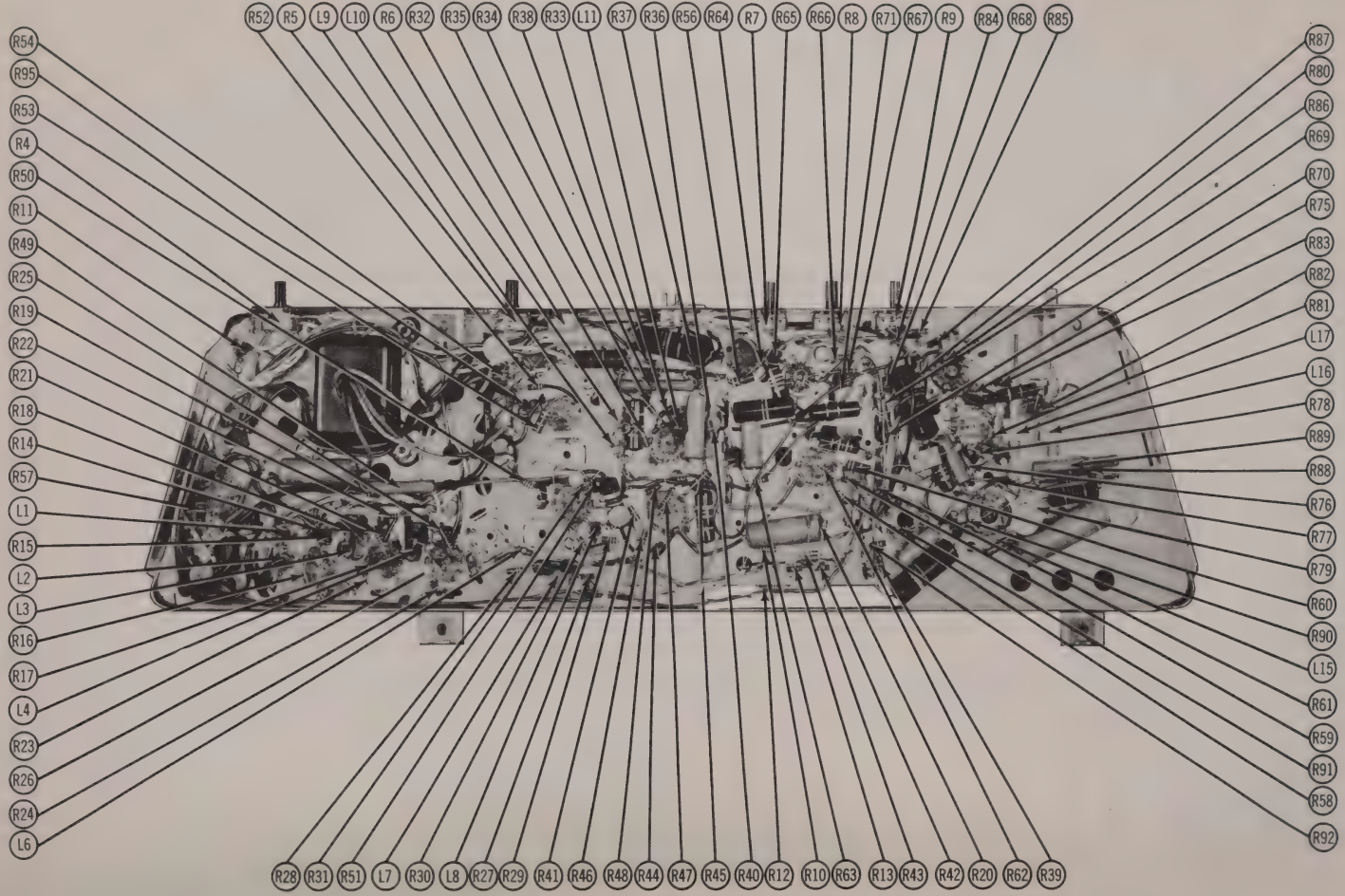
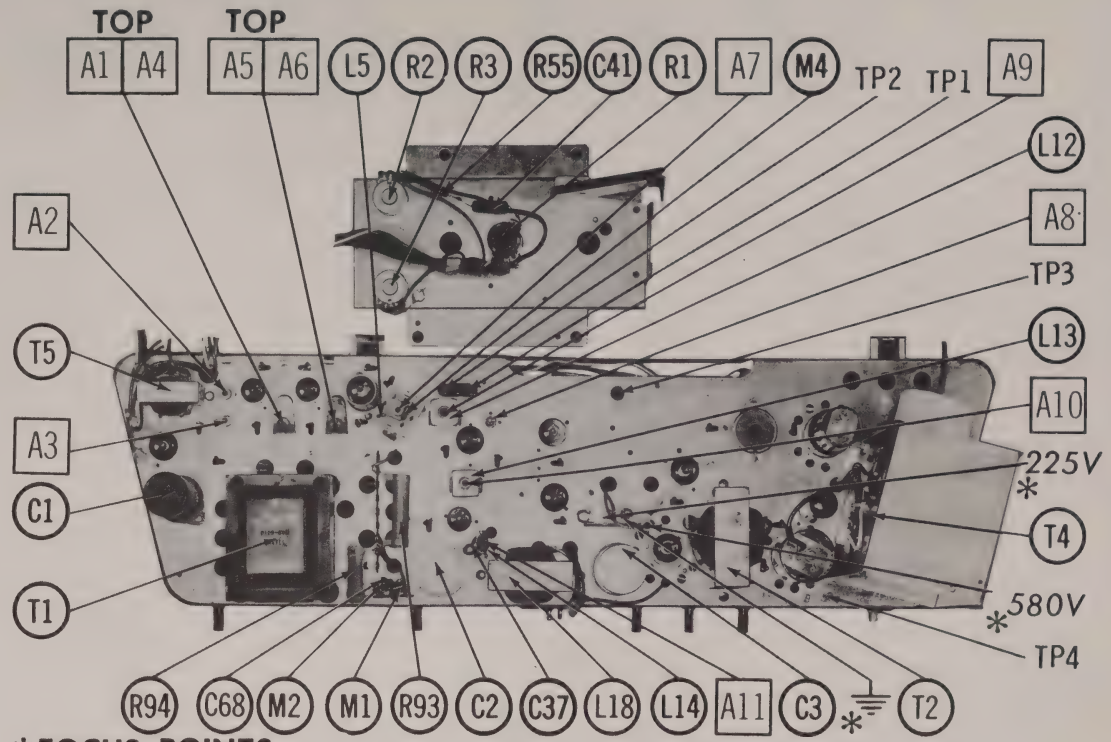


FIG. 202



CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

TP1 -.8V VIDEO AMP GRID
TP2 -.8V SYNC TAKEOFF
TP3 .5V AGC
TP4 180V HORIZ WAVEFORM



*FOCUS POINTS

CHASSIS - TOP VIEW

AIRLINE MODEL WG-5203A, -5205A,
-5213A, -5303A, -5305A, -5313A

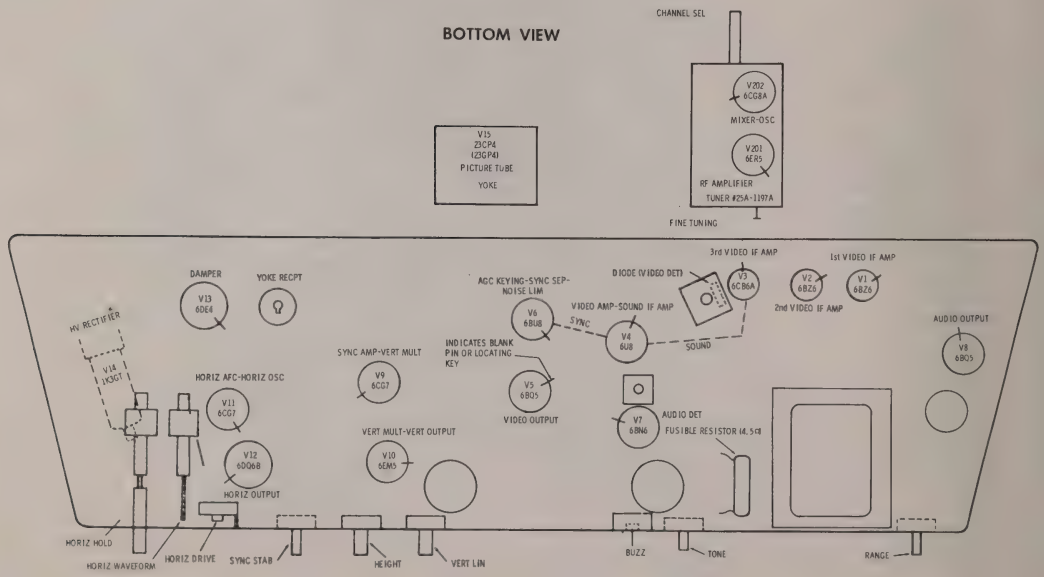
FOLDER 1

RESISTANCE MEASUREMENTS

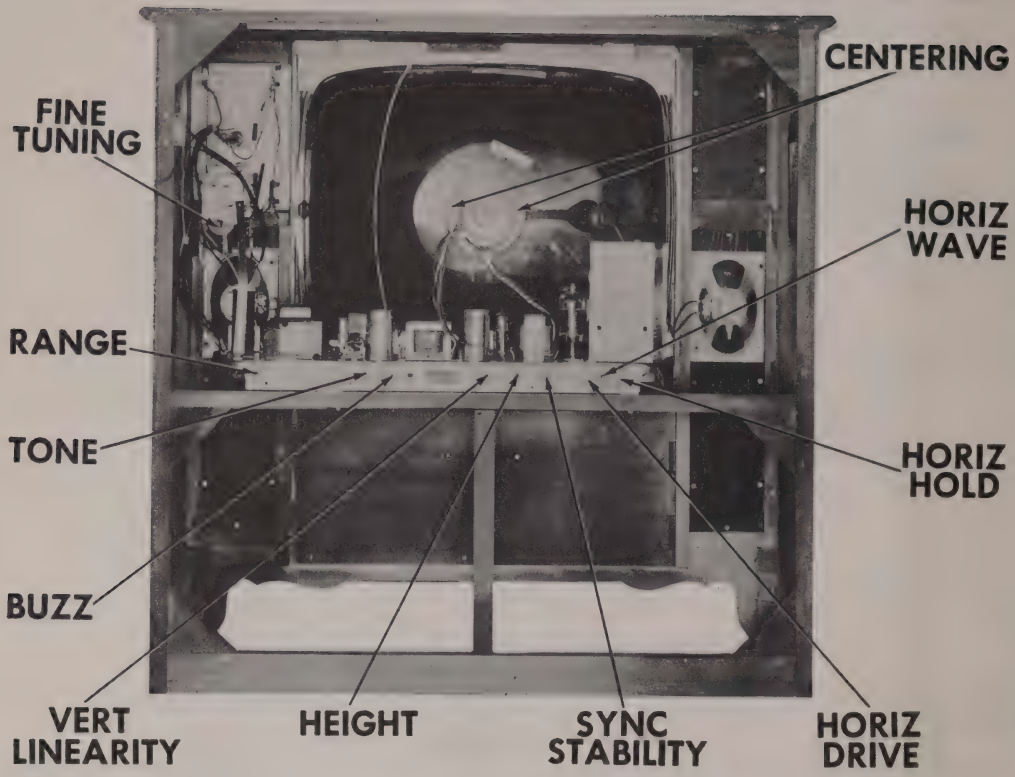
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	457K	47Ω	.1Ω	0Ω	†3500Ω	†3500Ω	0Ω		
V2	6BZ6	450K	47Ω	.1Ω	0Ω	†3500Ω	†3500Ω	0Ω		
V3	6CB6A	0Ω	180Ω	0Ω	.1Ω	†3000Ω	†3000Ω	0Ω		
V4	6U8	†9000Ω	6Ω	†35K	.1Ω	0Ω	†35K	2200Ω	0Ω	3900Ω
V5	6BQ5	NC	1meg	• 100Ω	.1Ω	0Ω	NC	†3600Ω	NC	†2500Ω
V6	6BU8	†2500Ω	†6800Ω	600K	0Ω	.1Ω	†42K	•†250K	†70K	†2.2meg
V7	6BN6	• 300Ω	3.5Ω	0Ω	.1Ω	†7200Ω	6Ω	†330K		
V8	6BQ5	• 0Ω	NC	270Ω	0Ω	.1Ω	NC	†1000Ω	NC	†510Ω
V9	6CG7	†12K	350K	0Ω	0Ω	.1Ω	• †1.1meg	•600K	0Ω	0Ω
V10	6EM5	†40Ω	TP	330K	0Ω	.1Ω	NC	470Ω	NC	†430Ω
V11	6CG7	†56K	430K	0Ω	0Ω	.1Ω	†40Ω	1.5meg	410K	0Ω
V12	6DQ6B	TP	0Ω	TP	†15K	1meg	TP	.1Ω	0Ω	TOP CAP †16Ω
V13	6DE4	NC	NC	¶	NC	†40Ω	TP	.1Ω	0Ω	
V14	1K3GT	PINS 1 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †335Ω
V15	Z3CP4	0Ω	1meg	† 10meg	† 100K	NC	NC	•300K	.1Ω	
V201	6ER5	0Ω	1meg	0Ω	.1Ω	†7800Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†7500Ω	0Ω	0Ω	.1Ω	†7800Ω	†2500Ω	0Ω	223K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a station and adjust the Horizontal Hold until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the Contrast Control fully counterclockwise and the Brightness Control clockwise so that the picture appears washed out. Turn the Horizontal Drive Trimmer (B1) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the Vertical Amplifier of the scope to TP-4. Low side to chassis. Adjust the Horizontal Waveform Slug (B2) until the round and sharp peaks of the waveform are equal in amplitude. See Fig. 4. Keep the picture in sync during this adjustment.

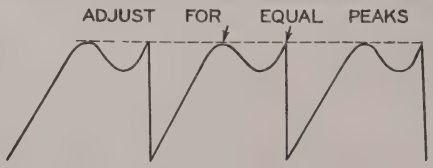


FIG. 4

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL WG-5203A

1. Remove 8 wood screws holding rear cover.
2. Remove 5 push-on type knobs in front of cabinet.
3. Remove antenna leads, speaker leads, picture tube socket, yoke plug, and high voltage lead.
4. Remove 4 screws holding control panel.
5. Remove 4 chassis bolts.
6. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal.

PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540

SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540

MODEL 1194 (TV CH. 528.51720
AND AUDIO AMP. CH. 528.59540)

SET 514 FOLDER 2

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540

SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

MODEL 1194 (TV CH. 528.51720 AND AUDIO AMP. CH. 528.59540)

TRADE NAME	SILVERTONE	MODEL	CHASSIS
		1130, 1132, 1150, 1152, 1154, 1158	528.51700
		1131, 1133, 1151, 1153, 1155, 1159	528.51701
		1194, 1196, 1198	528.51720
		1195, 1197	528.51721
		PC-1130, PC-1132, PC-1150, PC-1152, PC-1154, PC-1158	456.51700
		PC-1131, PC-1133, PC-1151, PC-1153, PC-1155, PC-1159	456.51701
		PC-1194, PC-1196, PC-1198	456.51720
		PC-1195, PC-1197	456.51721

SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Avenue, Chicago, Illinois
TYPE SET	Television Receiver (Models 1194, 1195, 1196, 1197, 1198, PC-1194, PC-1195, PC-1196, PC-1197 & PC-1198, with Dual Channel Audio Amp. Chassis 528.59540 and 4 Speed Automatic Record Changer)
TUBES	TV: VHF - Fifteen, UHF - Sixteen Dual Channel Amp.: Four
POWER SUPPLY RATING	110-120Volts AC, 60 Cycle TV & Amp. (Less Phono Motor) 225 Watts, 2 Amp. @ 117 Volts AC TV (Less Phono Motor) 150 Watts, 1.25 Amp. @ 117 Volts AC Amp. (Less Phono Motor) 75 Watts, .75 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS

In 23" Models the safety glass is an integral part of the picture tube.

FUSE DEVICE

A Circuit Breaker (Automatic Power Monitor) is used for low voltage power supply protection, and may be reset by depressing the reset button. (See "Tube Placement Chart" for location.)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, it is necessary to remove the rear cover.

AGC

The AGC may be varied by means of a Local-Distance Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 6 of the picture tube to various voltage points. (For location, see "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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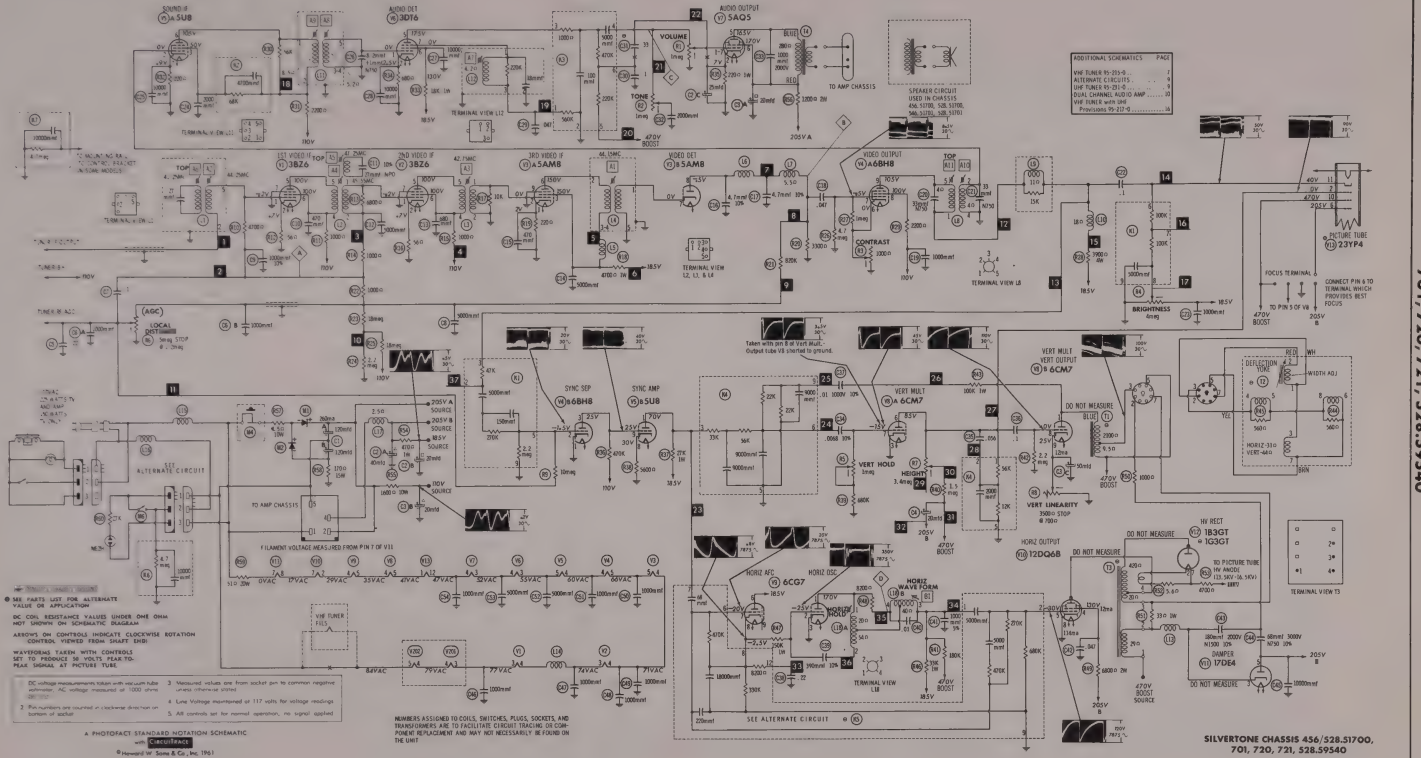
KC403

SET 514 FOLDER 2


SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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TO AMP CHASSIS
SPEAKER CIRCUIT USED IN CHASSIS 456, 51700, 528, 51700, 546, 51700, 528, 51701
TERMINAL VIEW T3
TERMINAL VIEW L8
TERMINAL VIEW L7, L1, & L4
TERMINAL VIEW L11
TERMINAL VIEW L6
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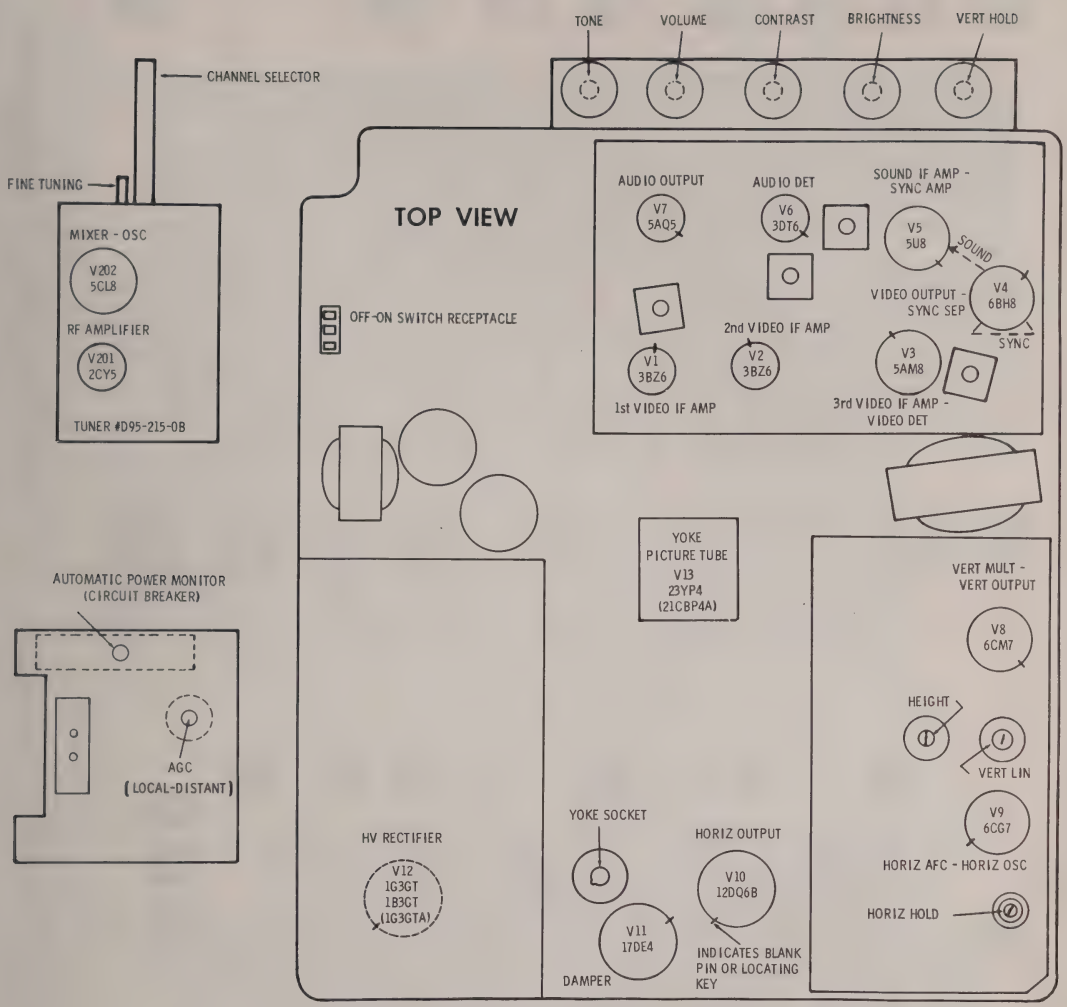
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

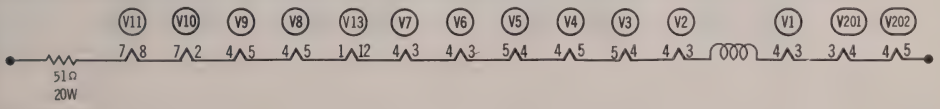
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V13
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, Rectifier (B+)
Vert. off freq. V8
Horiz. off freq. V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V13
Has pic, no sound V5, V6, V7 or Stereo Amp. in some Models

SYNC FAILURE
No vert. sync V4, V5
No horiz. sync V4, V5
No vert. or horiz. sync V4, V5

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)

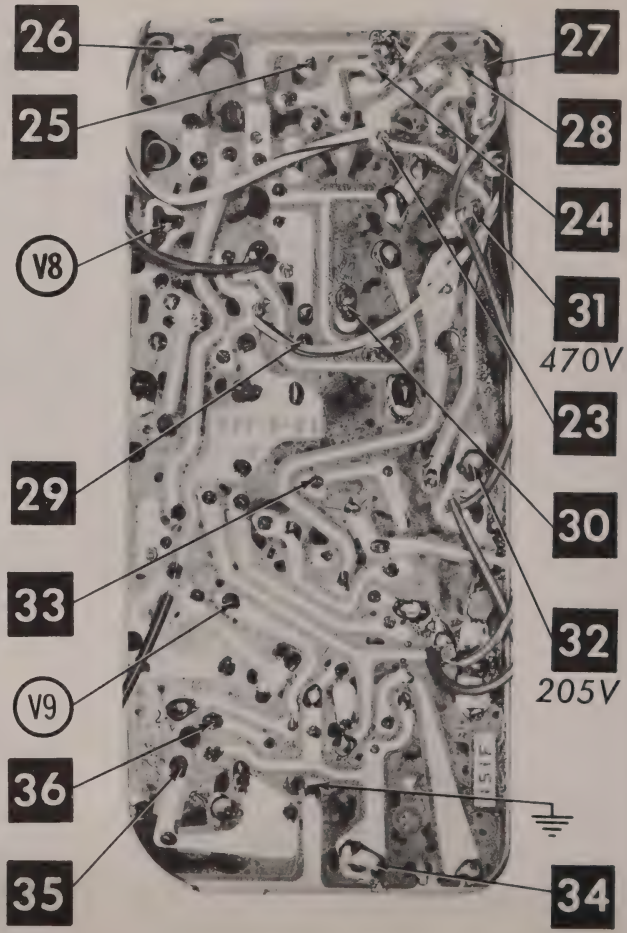


SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540

FOLDER 2

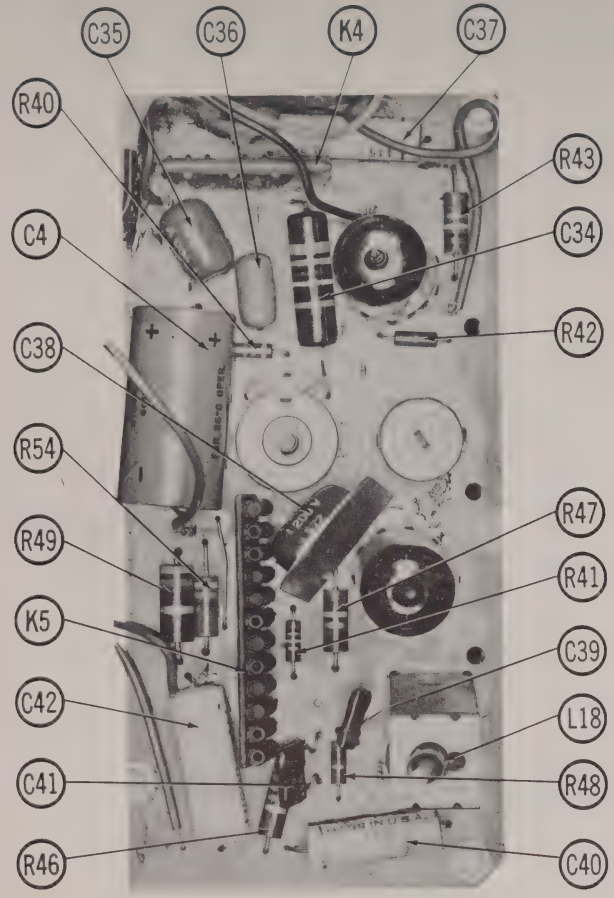
A Howard W. Sams CIRCUITRACE® Photo

VIDEO, SOUND, SYNC PRINTED BOARD

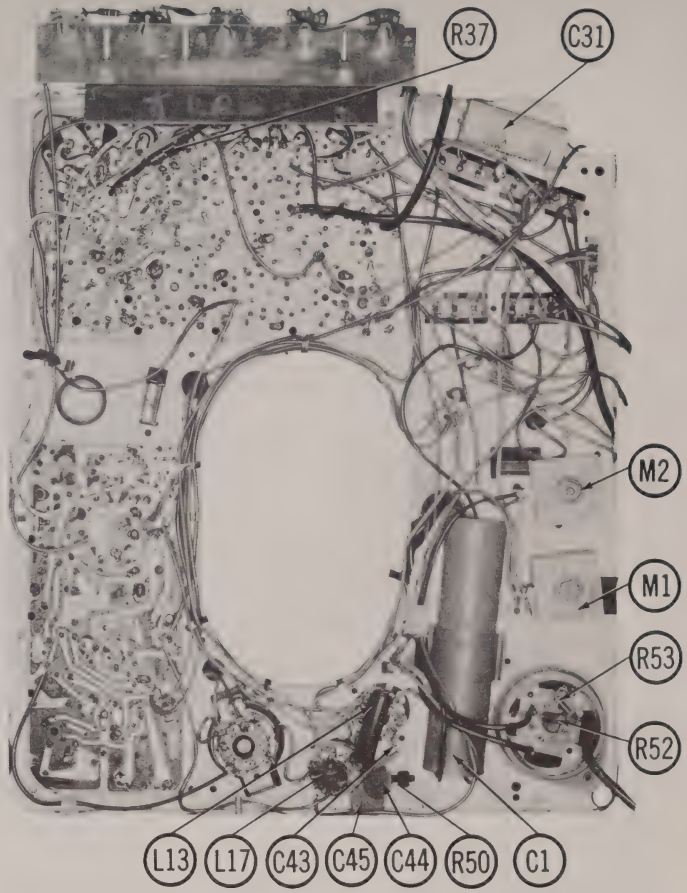


ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VERT., HORIZ. OSC. PRINTED BOARD



VERT., HORIZ. OSC. PRINTED BOARD
CAPACITOR, RESISTOR, MISC. IDENT.



TV CHASSIS - BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Short the antenna terminals together, but not to chassis.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Detune A1, A4, A5, A6, and Mixer Plate Coil by turning the cores almost out of the coil forms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.15MC (Unmod)	Any non-interfering channel	DC probe thru 10K to point (B). Common to chassis. (Across Video Det. load)	A1, A2, & Mixer Plate Coil	Attenuate generator output to maintain not more than 2 volts on VTVM. Adjust for maximum deflection.
2.	"	"	42.75MC	"	"	A3	"
3.	"	"	45.55MC	"	"	A4	"
4.	"	"	47.25MC	"	"	A5	Increase generator output. Adjust A5 for MINIMUM deflection. Repeat steps 3 and 4.
5.	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Short the antenna terminals together, but not to chassis.
Attenuate sweep generator output to maintain not more than 2 volts peak to peak on scope.
If separate marker generator is used, couple loosely to output cable of sweep generator.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.25MC (10MC Swp)	41.25MC 42.55MC 43.8MC 44.15MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point (B). Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch Mixer Plate Coil to place 45.75MC marker at 50%. Retouch A1 for proper tilt.

SOUND IF ALIGNMENT

Connect the negative lead of a 5 volt bias supply to point (A). Positive to chassis.
Set Contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.05mfd	High side to point (B). Low side to chassis. (.1 volt output)	4.5MC (400% FM 15KC Swp)	Any non-interfering channel	AC probe to point (C). Common to chassis.	A7, A8	Adjust for maximum deflection. If two peaks are found, use the greater peak.
2.	"	High side to point (B). Low side to chassis. (500 microvolts)	"	"	"	A9, A10	Adjust for maximum deflection. Retouch A8 for maximum deflection.

4.5MC TRAP ALIGNMENT

Tune in a TV signal and adjust the Fine Tuning until a 4.5MC beat interference is noted in the picture. Adjust A11 until the horizontal scanning lines are smooth and continuous.

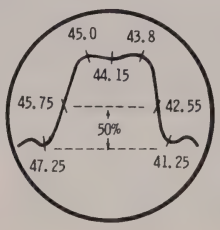
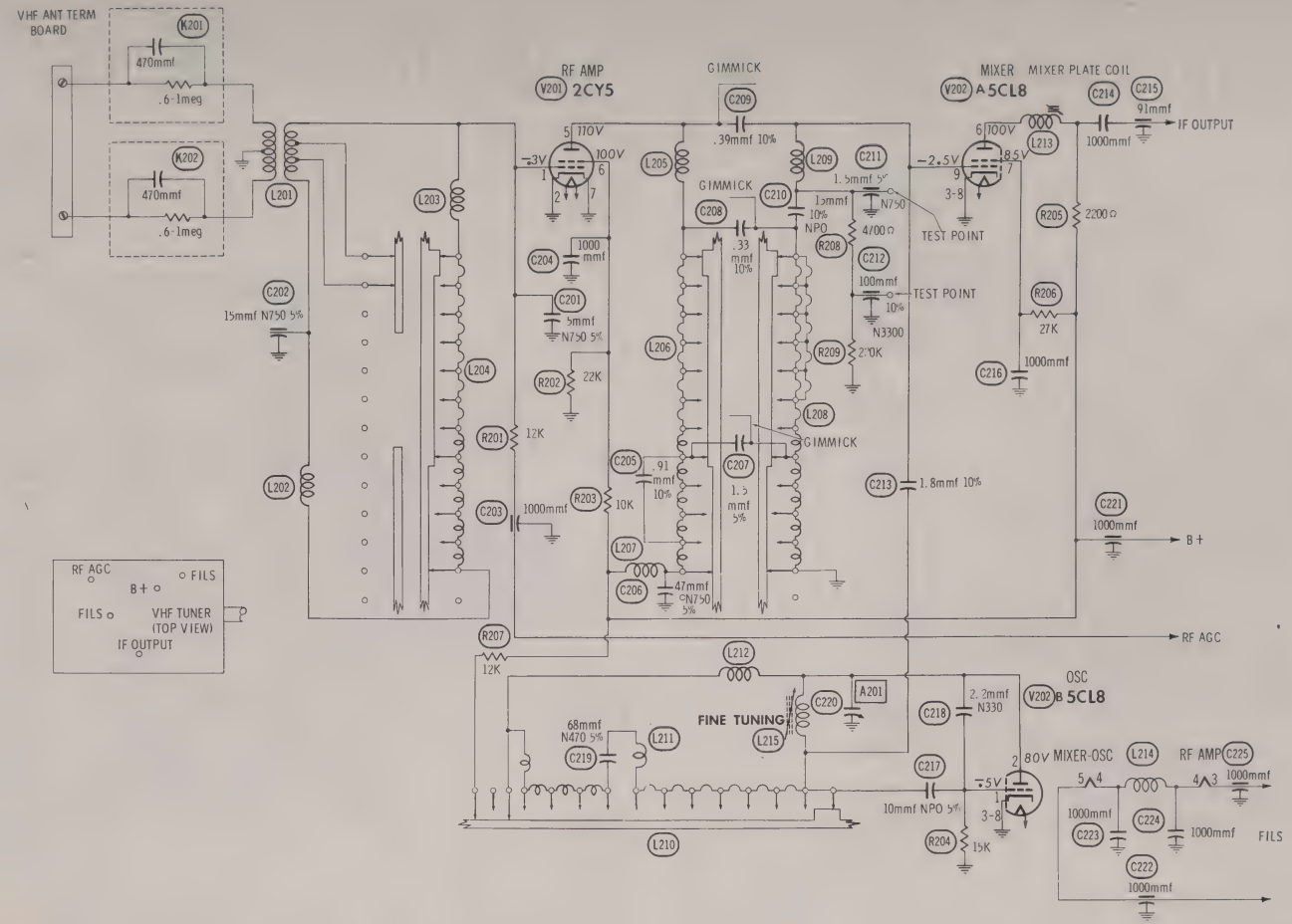


FIG.1



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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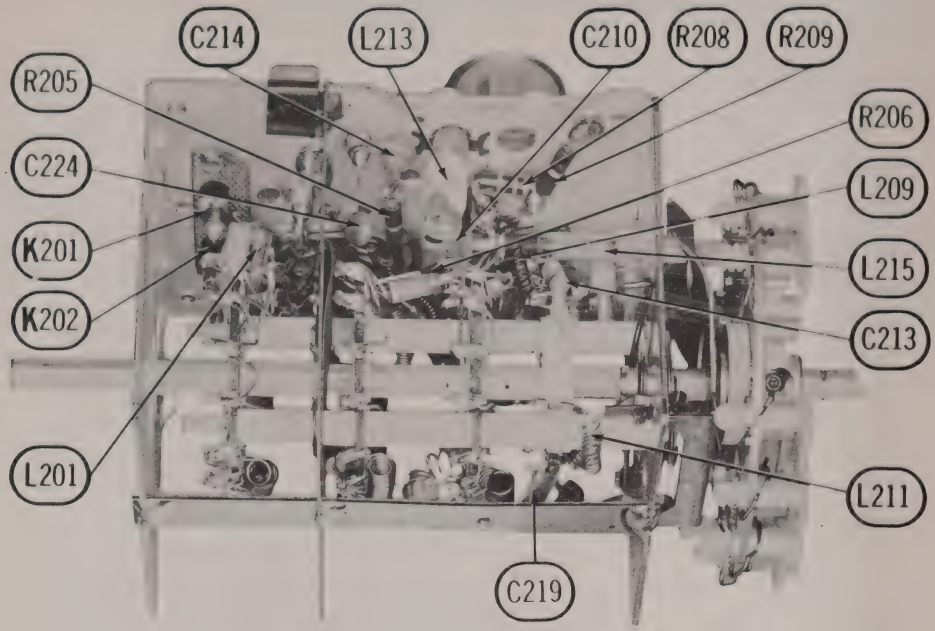
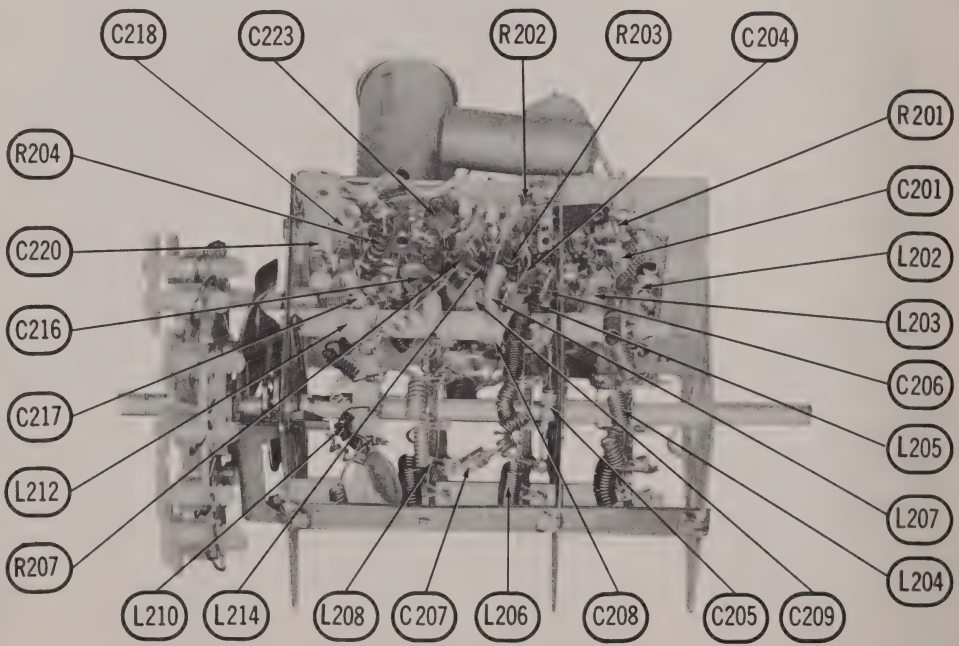
VHF TUNER 95-215-0

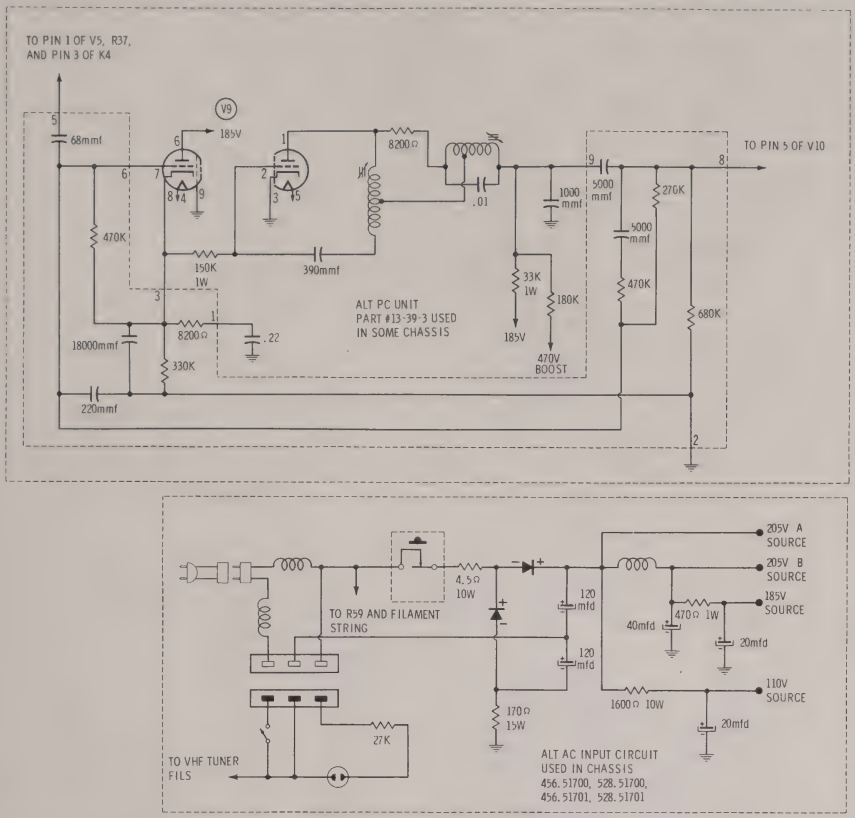
SILVERTONE CHASSIS 456/528.51700, 701, 720, 721, 528.59540



VHF TUNER 95-215-0 - LEFT SIDE



VHF TUNER 95-215-0 - RIGHT SIDE



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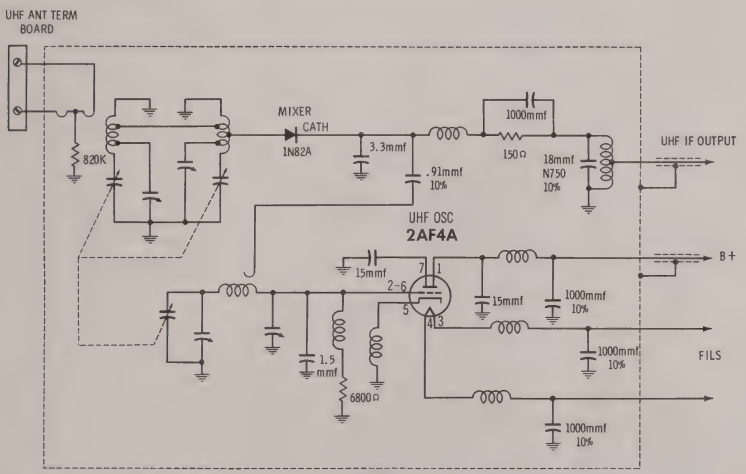
ALTERNATE CIRCUITS



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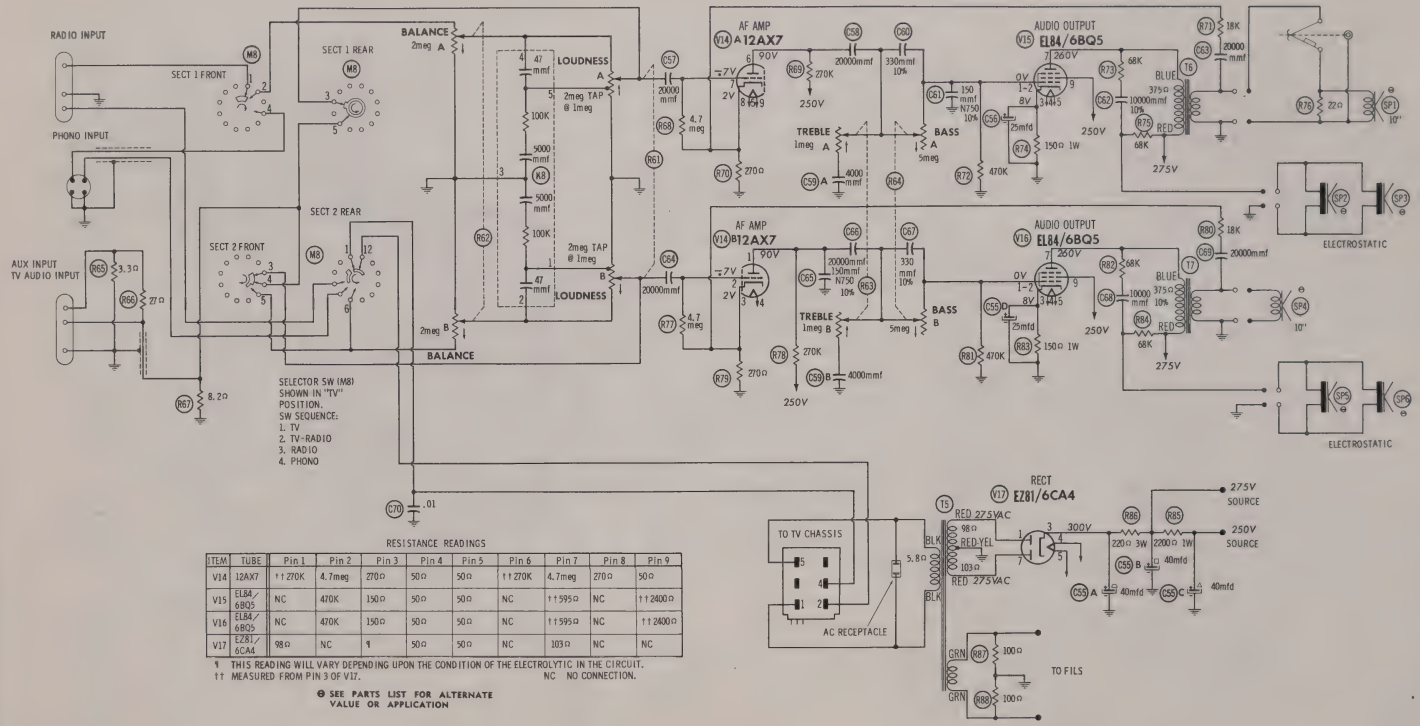
UHF TUNER 95-231-0



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V14	12AX7	††270K	4.7meg	270Ω	50Ω	50Ω	††270K	4.7meg	270Ω	50Ω
V15	EL84/6BQ5	NC	470K	150Ω	50Ω	50Ω	NC	††595Ω	NC	††2400Ω
V16	EL84/6BQ5	NC	470K	150Ω	50Ω	50Ω	NC	††595Ω	NC	††2400Ω
V17	EZ81/6CA4	98Ω	NC	¶	50Ω	50Ω	NC	103Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 3 OF V17. NC NO CONNECTION.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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AMPLIFIER SCHEMATIC

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	3BZ6	V7	Audio Output	5AQ5
V2	2nd Video IF Amp.	3BZ6	V8	Vert. Mult. - Vert. Output	6CM7
V3	3rd Video IF Amp. - Video Det.	5AM8	V9	Horiz. AFC - Horiz. Osc.	6CG7
V4	Video Output - Sync Sep.	6BH8	V10	Horiz. Output	12DQ8B
V5	Sound IF Amp. - Sync Amp.	5U8	V11	Damper	17DE4
V6	Audio Det.	3DT6	V12	HV Rectifier	1G3GT/1B3GT (1G3GTA)*

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V13	23YP4 21CBP4A	21CBP4A ①	23YP4 ① 21CBP4A ①	21CBP4/21CBP4A①	23YP4 ② 21CBP4/21CBP4A②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	120	150	18-50-5	PR2-050	BR15015	TCS49	TD-150-150	TVAS-2466 *	
B	120	150			BR15015		TD-150-150		
C2A	▲40	300	18-53-3	AFH3-110-50	XC0732	FP333.5	TMD-2530	TVLS-3564.2 *	
B	■20	300					TD-40-350		
C	25	15							
C3A	■20	300	18-52-3	AFH3-138	B0400	FP366	TMD-2295	TVLS-3751.2 *	
B	▲20	300			BR505		TD-50-50		
C	50	50							
C4	20	350	18-76-5	PRS7560	BR2035	TC65	TD-20-350	TVANS-1608.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.22	100V			P288N-22		CUB2P1	1DP-3-224	GEM-2022	2TM-P22
C6A	1000							CCD-102		
B	1000				BPD-2X001	DD3-102	BYD6DD1	CCD-102	B2X210	5HK-2D10
C7	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C8	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	1000		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D20
C10	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C11	27	NPO	10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C12	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	680				BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C14	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C16	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C17	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C18	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C19	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	33	N750			N750-DI 33	DTN-33	C10Q33U	CCTN-330	CNO-433	10TCU-Q33
C21	33	N750			N750-DI 33	DTN-33	C10Q33U	CCTN-330	CNO-433	10TCU-Q33
C22	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C23	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C24	2000				BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C25	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	8.2	N750	±1mmf	Pt. #20-118-0						
C27	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	2TM-S47
C30	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C31	.33	600V		Note 1	P688N-33		PM4P33	6DP-6-334	GEM-6033	
C32	2000				BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C33	1000	2000V			HVD-30-1000	DD30-102	HVB20D1	3CCD-102	2HV-210	20GA-D1
C34	.0068	600V	10%		V84C6D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C35	.056	400V			P684CM-057		DPMS6S56	4DP-3-563	GEM-6156	4PS-S56
C36	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C37	.01	1000V	10%				DPMS16S1	16DP-3-103	GEM-1611	10TM-S10
C38	.22	200V			P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C39	390		10%		1469-00039		5R5T39	CM-19B-391K	MCB243	MS-339
C40	.01	600V			P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C41	1000		5%		1469-001		5R5D1	CM-19B-102J	MCJ255	MS-21
C42	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	180	2000V	N1500 10%	Pt. #15-181316						
C44	68	3000V	N750 10%	Pt. #20-127-0						
C45	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C47	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C48	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C49	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C50	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C51	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C52	5000				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C53	5000				BPD-005	DD-503	BYA10D5	CCD-502	B-250	5HK-D50
C54	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

Note 1. Not used in Ch. 456.51700, 701 and 528.51700, 701.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg		24-343-0	B-70	A47-1meg-A	Q23-127	U53	Volume
B	Shaft			Not Req.	B38-3	Not Req.	Not Req.	
R2A	1meg		24-342-0	B-70	A47-1meg-A	Q23-127	U53	Tone
B	Shaft			Not Req.	B38-3	Not Req.	Not Req.	
R3A	100KΩ		24-151-1	B-5	A47-100K-B	Q31-108	TA131	Contrast
B	Shaft			Not Req.	B38-3	Not Req.	Not Req.	
R4A	4meg		24-150-1	B-86	A47-4meg-S	011-240	TA56L	Brightness
B	Shaft			Not Req.	B38-3	Not Req.	Not Req.	
R5A	1meg		24-152-1	B-69	A47-1meg-S	Q31-127	TA161	Vert. Hold
B	Shaft			Not Req.	B38-3	Not Req.	Not Req.	
R6A	5meg		24-91-1	T-46	B47-5meg-S	P11-240	PTA56L	Local-Distance (AGC)
	Centering Stop							
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7	3 meg		24-140-1					Height
R8	350KΩ (2/3R9)		24-053-1			110-2000	PF63K	Vert. Linearity
	700Ω Stop					**	**	

* Use 1meg resistor in series with right hand terminal, viewed shaft end terminals down.
** Use 680Ω resistor in series with terminal.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R9	10meg		R28	39000 4W	Pt. #61-172-0 (IRC #PW3-3900K)	R46	33K 1W	
R10	47000		R47	150K 1W				
R11	10000		R29	22000		R48	82000	
R12	56Ω		R30	56K		R49	68000 2W	
R13	6800Ω		R31	220KΩ		R50	10000	
R14	1000Ω		R32	220Ω		R51	33Ω 1W	
R15	10000		R33	18K 1W		R52	5.6Ω	
R16	56Ω		R34	680Ω		R53	47000	
R17	10K		R35	220Ω 1W		R54	47Ω 1W	
R18	47000 1W		R36	470K		R55	16000 10W	Pt. #61-135-0 (IRC #PW10-16000)
R19	22KΩ		R37	27K 1W				
R20	3300Ω		R38	560Ω		R56	12000 2W	
R21	68KΩ		R39	680K		R57	4.5Ω 10W	Pt. #61-152-0 (IRC #PW4.5Ω)
R22	10000		R40	1 5meg				
R23	18meg		R41	180K		R58	170Ω 15W	Pt. #61-138-0
R24	2 2meg		R42	2 2meg		R59	51Ω 20W	Pt. #61-118-0
R25	18meg		R43	100K 1W		R60	27K	
R26	4 7meg		R44	560Ω				
R27	1meg		R45	560Ω				

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
X1	Video & Sync Sep. Grid	150mmf, 5000mmf, 5000mmf, 47K, 100K, 100K, 270K, 2.2meg	13-34-3	Centralab PC-396 Sprague ET-18
X2	Sound IF Screen	4700mmf, 68K	13-31-3	
X3	Audio Coupling	100mmf, 5000mmf, 1000Ω, 220K, 470K, 560K	13-33-3	Centralab PC-397 Sprague 2N-6
X4	Vert. Integrator & Vert. Output Grid	2000mmf, 5000mmf, 2000mmf, 9000mmf, 18K, 22K, 33K, 33K, 56K, 56K	13-32-3	Centralab PC-395 Sprague VT-18
X5	Horiz. Osc. Network	68mmf, 220mmf, 5000mmf, 5000mmf, 18000mmf, 82000, 270K, 330K, 470K, 470K, 680K	13-31-5	Note 1
X6	Isolation	1000mmf, 4.7meg	13-17-3	
X7	Isolation	1000mmf, 4.7meg	13-17-3	

Note 1. Some versions may use Component Combination Part #13-39-3.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1A	1st Video IF	10-25-3				
B	4) 25MC Trap					
L2A	2nd Video IF	10-23-3				
B	47.25MC Trap					
L3	3rd Video IF	10-22-3				
L4	4th Video IF	10-24-3				
L5	RF Choke	10-151-1				
L6	RF Choke (13ah)	10-65-1	BC-566	4623	RTC-8523	
L7	Peaking (60ah)	10-148-1	TV-193	6110	RTC-8573	
L8	4.5MC Trap	10-152-1				
S	1st Sound IF					① Wound on 15K Resistor.
L9	Peaking (47ah)	10-66-1 ①	TV-198 *	6130 *	RTC-8576 *	* Parallel with 15K Resistor.
L10	Peaking (36ah)	10-147-1	TV-198	6130	RTC-8576	
L11	2nd Sound IF	10-33-3				
L12	Quadrature	10-38-5				
L13	RF Choke (2.5ah)	10-136-1	SW-630	4606	RTC-8517	
L14	FIL. Choke (5ah)	10-156-1	BC-581	4601	RTC-8515	
L15	Line Choke (40ah)	10-149-1	TV-180	6176	RTC-8593	
L16	Line Choke (47ah)	10-150-1	TV-180	6176	RTC-8593	
L17	RF Choke (27ah)	10-138-1	TV-198	6130	RTC-8578	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
L18A	Horiz Osc	10-20-5						
B	Horiz Stabilizer							

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	NOTES
T1	Vert. Output	180-1-3x	A-2634 ④		VO-1-U6 ⑤		A-126X	
	Adj. Vert. Output	80-1-3						
T2	Video (Horiz. 15MH, 90° (Vert. 450MA)	D80-5-4G	MDF-92 ③ ⑤	PCM-3045 ③ ⑤	DV-15A ③ ⑤	Y-16 ③ ⑦	T-43 & TW1	
	Alt. Yoke	80-5-4 ⑦						
	Alt. Yoke	80-17-4						
	Resr Conv and Centering Device	83-936						
	Width Device	83-1334						
T3	Horiz. Output	80-1-3Q	HVO-146 *			FLY-1 46 *	D-161 *	
	Alt. Horiz. Output	80-1-3						

① Drill new mounting hole(s).
② Mount with lead out bottom and connect Yoke Terminal #6 to Yoke Terminal #3 and connect to Yoke Plug #5; Yoke Terminal #1 to Yoke Plug #7; Yoke #2 and #7 to Plug #2.
③ Use original rear cover and centering device and original yoke damping network if necessary.
④ Cut and tape blanking lead.
⑤ Includes plug and leads.
⑥ Mount with lead out bottom, connect Yoke Terminal #6 to Yoke Terminal #3 and connect to Yoke Plug #5;

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL (CONNECTIONS)	Merit Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
4	4			5	5
3	3		4	4	
2	2		3	3	
1	1		1	1	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	NOTES
T4	6000Ω	3-4Ω	80-16-1	A-2930	A-3877	24S51	S-49X	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	QUAM PART No.	NOTES
	4"	PM	6-8Ω	33-318-4 ①	4A0T27H	① Two used in Models 130, 131, 132, 133, PC-130, PC-131, PC-132, PC-133.
	5"	PM	6-8Ω	33-301-4 ②	5A0T27.5	② Two used in Models 150, 151, 152, 153, 154, 155, 156, 158, PC-150, PC-151, PC-152, PC-153, PC-154, PC-155, PC-156, PC-159.

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SILVERTONE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	260A	86-3-3 *	1N1765 *	300 *	SR500 *	* Selenium
M2	260A	86-3-3 *	1N1763 *	300 *	SR500 *	* Silicon

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuner	95-215-0	VHF, Ch. 456/524, 51700, 51701
	Tuner	95-217-0	VHF with UHF Provisions, Ch. 456/524, 51720, 51721
	Tuner	95-231-0	UHF, Ch. 456/524, 51720, 51721
M4	Circuit Breaker	43-3-3	Automatic Power Monitor
M5	Magnet	27-66-2	Beam Alignment (Not used in all versions)
M6	Switch	89-291-0	Off-On (with Leads)
	Printed Board	84-7274-3	IF, Sync Complete (Less Tubes)
	Printed Board	25-1-0	IF, Sync Less All Components
	Printed Board	84-7005-1	Vert. & Horiz. Osc., Complete (Less Tubes)
	Printed Board	25-2-0	Vert. & Horiz. Osc., Less All Components

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	40-49-5	Model 1230, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133
Bezel	40-17-4	Model 1284, 1285, PC1285, 1286, PC1286, 1287, PC1287, 1288, PC1288
Bezel	40-30-4	Model 1150, PC1150, 1151, PC1151, 1152, PC1152, 1153, PC1153, 1154, PC1154, 1155, PC1155, 1156, PC1156, 1158, PC1159
Safety Glass	48-148-0	Window, Model 1150, PC1150, 1151, PC1151, 1152, PC1152, 1153, PC1153
Knob	52-1363-0	VHF Channel Selector, Model 1130, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133
Knob	52-1422-0	VHF Channel Selector, Model 1150, PC1150, 1151, PC1151, 1152, PC1152, 1153, PC1153, 1154, PC1154, 1155, PC1155, 1156, PC1156, 1158, PC1159, 1284, PC1284, 1285, PC1285, 1286, PC1286, 1287, PC1287, 1288, PC1288
Knob	52-926-0	UHF Channel Selector, Model 1195, PC1195, 1197, PC1197, 1131, PC1131, 1133, PC1133, 1150, PC1150, 1151, PC1151, 1152, PC1152, 1153, PC1153, 1154, PC1154, 1155, PC1155
Knob	52-924-0	UHF Channel Indicator, Model 1195, PC1195, 1197, PC1197, 1131, PC1131, 1133, PC1133, 1150, PC1150, 1151, PC1151, 1152, PC1152, 1153, PC1153, 1154, PC1154, 1155, PC1155
Knob	52-1358-0	Fine Tuning, Model 1158, PC1158, 1192, PC1192, 1194, PC1194, 1195, PC1195, 1196, PC1196, 1197, PC1197, 1198, PC1198

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-1352-0	On-Off, Model 1130, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133,
Knob	52-1423-0	On-Off, Model 1150, PC1150, 1151, PC1151, 1152, PC1152, 1153, PC1153, 1154, PC1154, 1155, PC1155, 1156, PC1156, 1194, PC1194, 1195, PC1195, 1196, PC1196, 1197, PC1197, 1198, PC1198, 1159, PC1159
Knob	52-1387-0	Brightness, Contrast, Volume, Tone, Vertical Hold, Model 1150, PC1150, 1151, PC1151, 1152, PC1152, 1153, PC1153, 1154, PC1154, 1155, PC1155, 1156, PC1156, 1194, PC1194, 1195, PC1195, 1196, PC1196, 1197, PC1197, 1198, PC1198
Knob	52-1357-0	Brightness, Contrast, Volume, Vertical Hold, Model 1130, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133
Knob	52-1449-0	Function Selector, Loudness, Tone, Treble, Balance
Cabinet	42-321-0	Mahogany, Model 1194, PC1194, 1195, PC1195
Cabinet	42-322-0	Blond, Model 1196, PC1196, 1197, PC1197
Cabinet	42-323-0	Walnut, Model 1198, PC1198
Cabinet	42-173-0	Mahogany, Model 1130, PC1130, 1131, PC1131
Cabinet	42-174-0	Blond, Model 1133, PC1133, 1135, PC1135
Cabinet	42-213-0	Mahogany, Model 1150, PC1150, 1151, PC1151
Cabinet	42-214-0	Blond, Model 1152, PC1152, 1153, PC1153
Cabinet	42-215-0	Walnut, Model 1154, PC1154, 1155, PC1155
Cabinet	42-325-0	Maple, Model 1156, PC1156, 1159, PC1159
Leg	49-729	Maple, Model 1158, PC1156, 1159, PC1159
Leg	49-630	Mahogany, Model 1150, PC1150, 1151, PC1151
Leg	49-631	Blond, Model 1152, PC1152, 1153, PC1153
Leg	49-6232	Walnut, Model 1154, PC1154, 1155, PC1155
Leg	49-907	Mahogany, Frost, Model 1130, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133
Leg	49-734	Mahogany, Rear, Model 1130, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133
Leg	49-908	Blond, Frost, Model 1130, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133
Leg	49-735	Blond, Rear, Model 1130, PC1130, 1131, PC1131, 1132, PC1132, 1133, PC1133
Leg	49-674	Mahogany, Model 1194, PC1194, 1195, PC1195
Leg	49-675	Blond, Model 1196, PC1196, 1197, PC1197
Leg	49-713	Walnut, Model 1198, PC1198

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8454 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE * GENERAL ELECTRIC	TYPE * RAYTHEON	TYPE * SYLVANIA
V14	Channel 1 AF Amp.- Channel 2 AF Amp.	12AX7		ECL84/6BQ6
V15	Channel 1 Output	EL84/6BQ6		EZ81/6CA4
V16	Channel 3 Output			ECL84/6BQ6
V17	Rectifier			EZ81/6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C55A	40	350	18-59-3	AFH4-53	DD460	-	FP327.89	TVG-4247	TVL-4632.3
B	40	300					TC26		
C	40	300							
D	25	25							
C56	25	25	18-52-5	PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C57	20000		BPD-02	DD-303	BYB632	CCD-203	B-130	5HK-830
C58	20000		BPD-02	DD-303	BYB632	CCD-203	B-130	5HK-830
C59A	4000		BPD-3X004	CDD-402	BYC5ED4	CCD-402	B-240	5HK-3D40
B	4000			CDD-402		CCD-402	B-240	
C60	330	10%	DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C61	150 N750	10%	N750-DI150	TCH-150	C10T15U	CCT4-151	CNT-151	10TCU-T15
C62	10000	10%	DI-10000		PM6S	CCD-103	GEM-1611	10TS-S10
C63	20000	-	BPD-02	DD-303	BYB632	CCD-203	B-130	5HK-830
C64	20000	-	BPD-02	DD-303	BYB632	CCD-203	B-130	5HK-830
C65	150 N750	10%	N750-DI150	TCH-150	C10T15U	CCT4-151	CNT-151	10TCU-T15
C66	20000		BPD-02	DD-303	BYB632	CCD-203	B-130	5HK-830
C67	330	10%	DI-331	DD-331	L10T33	CCD-331	GP333	10TS-T33
C68	10000	10%	DI-10000		PM6S	CCD-103	GEM-1611	10TS-S10
C69	20000		BPD-02	DD-303	BYB6S	CCD-203	B-130	5HK-830
C70	.01 400V		P4S8N-01	DS-103	CUB4S	41D-1-103	GEM-41	47M-S01

AMP PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R61A	2meg 1meg Tap		24-414	BT-82				Loudness, Channel 1
B	2meg 1meg Tap			STR-82				Loudness, Channel 2
R62A	2meg		24-415				FA26A	Balance, Channel 1
B	2meg						RU26R	Balance, Channel 2
C	Shaft						CS3500	
R63A	1meg		24-417	B-70	AD47-1meg-Z		FA16A	Treble, Channel 1
B	1meg			SR-70	Not Req.		RU16A	Treble, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
R64A	5meg		24-416	B-87	AD47-5meg-S		FA56L	Bass, Channel 1
B	5meg			SR-87	Not Req.		RU56L	Bass, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R65	3.3Ω	
R66	27Ω	
R67	8.2Ω	
R68	4.7meg	
R69	270K	
R70	270Ω	
R71	18K	
R72	470K	
R73	68K	

ITEM No.	RATING	REMARKS
R74	150Ω 1W	
R75	68K	
R76	22Ω	
R77	4.7meg	
R78	270K	
R79	270Ω	
R80	18K	
R81	470K	
R82	68K	

ITEM No.	RATING	REMARKS
R83	150Ω 1W	
R84	68K	
R85	2200Ω 1W	
R86	220Ω 3W	Pt. #61-195-0 IRC #PW5-220Ω
R87	100Ω	
R88	100Ω	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K8	Stereo Balance Comp.	47mmf, 47mmf, 5000mmf, 5000mmf, 100K, 100K	13-42-3	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	117V @ .75A	550V CT @ .110A DC	6.3V @ 2.7A	80-45-0					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	4800Ω	6-8Ω	80-126-1	A-2902 ①	A-3849 ①	24S64	S-54X	① Drill new mounting hole(s).
T7	4800Ω	6-8Ω	80-126-1	A-2902 ①	A-3849 ①	24S64	S-54X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	10"	PM	6-8Ω	33-478-4B	10A6AZ6	Used in Models 1194, 1195, 1196, 1197, 1198, PC-1194, PC-1195, PC-1196, PC-1197, PC-1198
SP2	Electrostatic			84-6276		
SP3	Electrostatic			84-6276		
SP4	10"	PM	6-8Ω	33-478-4B	10A6AZ6	
SP5	Electrostatic			84-6276		
SP6	Electrostatic			84-6276		

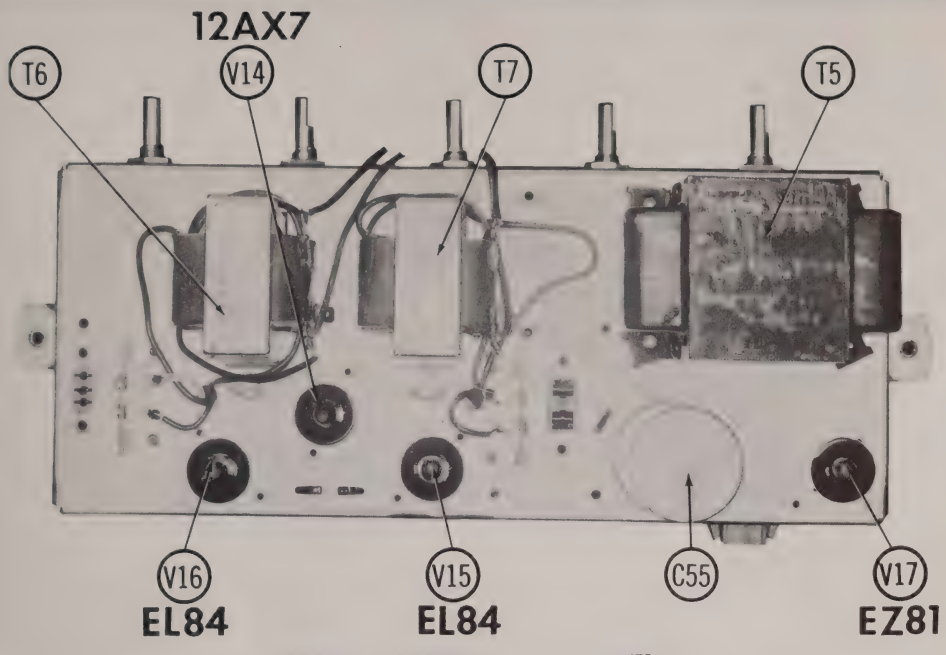
PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

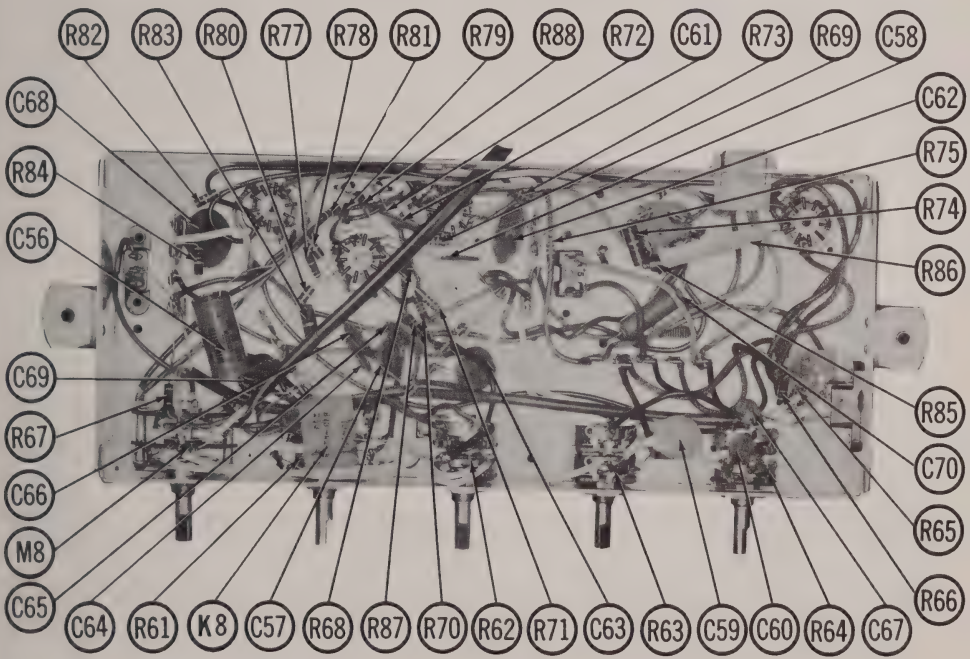
ITEM No.	REPLACEMENT DATA								NOTES
	SILVERTONE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M7	33-333-0	Not Req.	13TB	Not Req.	26S	S1-1 * S3-3 *	10T2-S	Not Req.	

MISCELLANEOUS

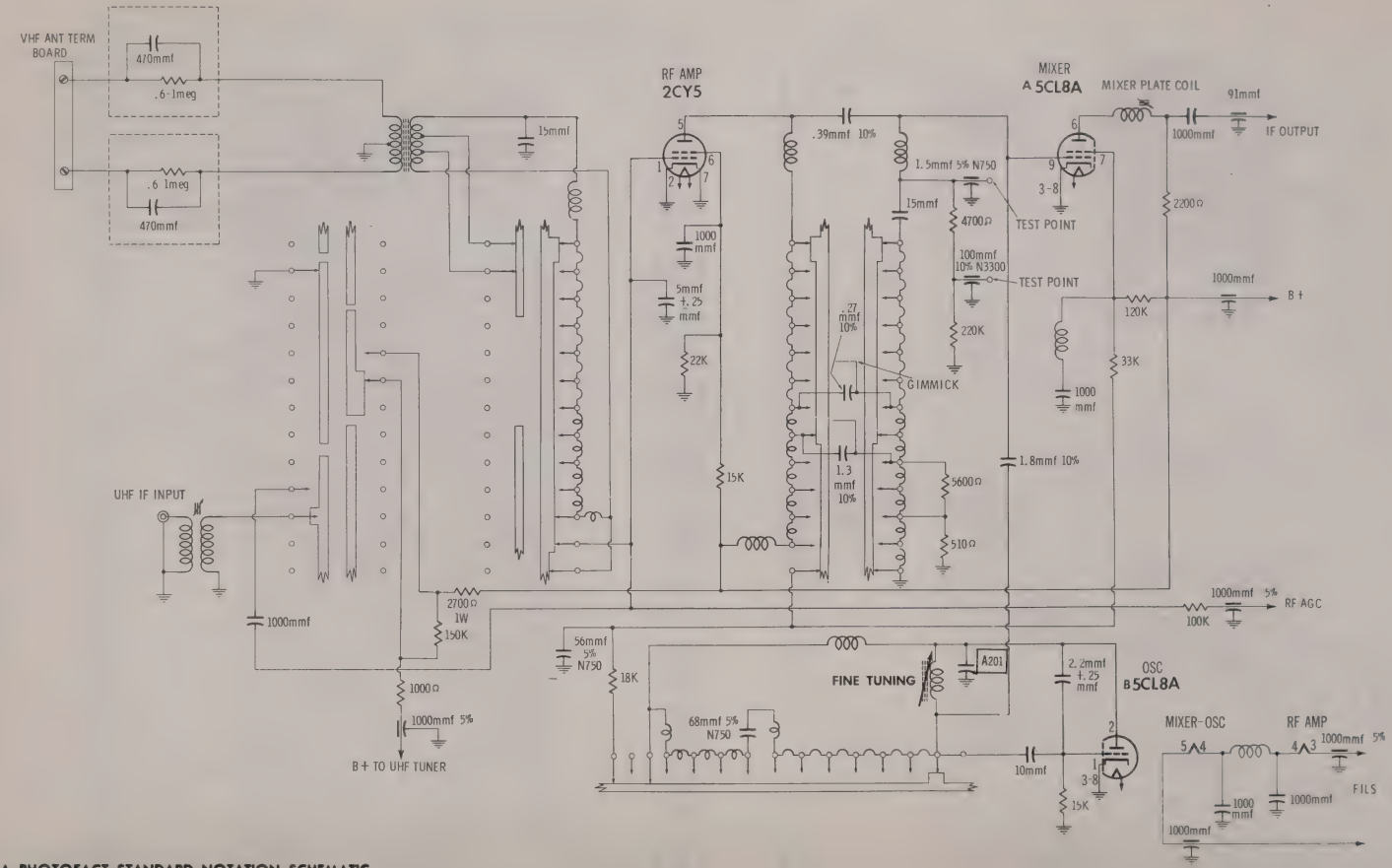
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M8	Switch	69-350-0	Selector (Rotary Wafer)



AMP. CHASSIS - TOP VIEW



AMP. CHASSIS - BOTTOM VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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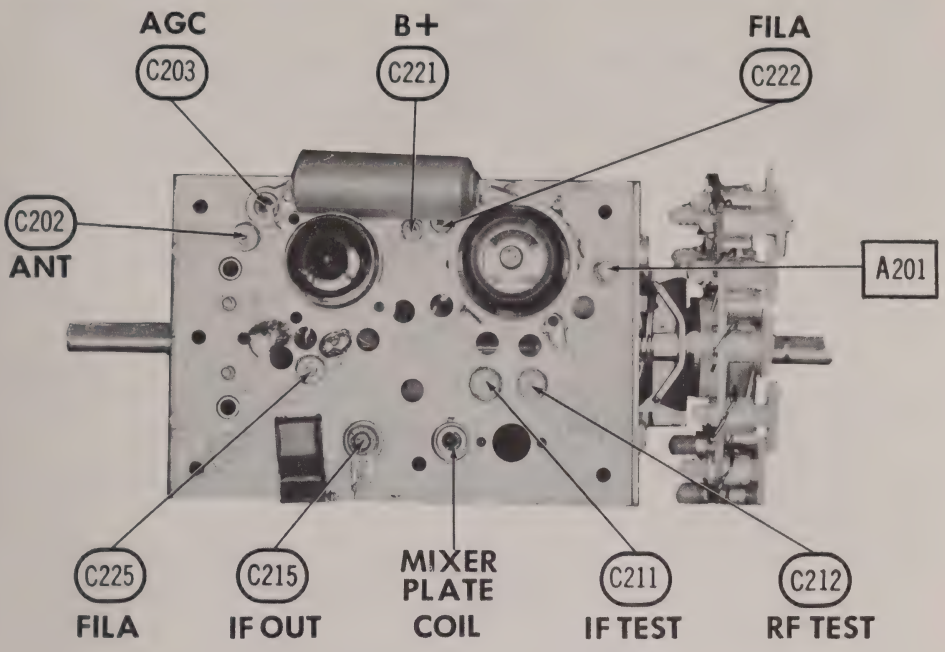
VHF TUNER with UHF Provisions - 95-217-0



VHF TUNER 95-215-0 TOP VIEW

TUNER ALIGNMENT INSTRUCTIONS

95-215-0
95-217-0

PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: GENERAL CEMENT #8721, 8722
WALSCO #2519

OSCILLATOR ALIGNMENT

Turn set on and allow 10 minutes warm-up period. Turn to the highest channel received in your area and set the Fine Tuning to the center of its range.
Adjust A201 for clearest picture. Turn the Channel Selector to the next operating channel and adjust the Fine Tuning for clearest picture. Adjust the Fine Tuning for each channel for best picture. If on any channel, the Fine Tuning cannot clear the picture up, retouch A201 and readjust the Fine Tuning for all channels.

RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

TUNER PARTS LIST AND DESCRIPTIONS

95-215-0

TUBES

• GENERAL ELECTRIC •		RAYTHEON • SYLVANIA •			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	2CY5	V202	Mixer - Osc.	5CL8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	5	N750	5%			DTN-5	C10V5U	CCTN-050	CNO-547	10TCC-V50
C202	15	N750	5%	Pt. #258-150						
C203	1000				EF-001	MFT-1000		CCF-102	CT280A	
C204	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C205	.91		10%	Pt. #2101-918						
C206	47	N750	5%			DTN-47	C10Q47U	CCTN-470	CN7-447	10TCC-Q47
C207	1.5		5%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C208	.33		10%	Pt. #2101-338						
C209	.39		10%	Pt. #2101-398						
C210	15	NPO	10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C211	1.5	N750	5%	Pt. #259-159						
C212	100	N3300	10%	Pt. #252-101						
C213	1.8		10%		NPO-SI 2.0		C10V2C			10TCC-V18
C214	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C215	91			Pt. #253-910						
C216	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C217	10	NPO	5%		NPO-SI 10	TCZ-10	C10V1C	CCTO-100	CNO-410	10TCC-Q10
C218	2.2	N330		Pt. 166-229				*		
C219	68	N470	5%					*		
C220				Pt. #1620-13						
C221	1000				EF-001	MFT-1000		CCF-102	CT280A	
C222	1000				EF-001	MFT-1000		CCF-102	CT280A	
C223	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C224	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C225	1000				EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	12K	
R202	22K	
R203	10K	

ITEM No.	RATING	REMARKS
R204	15K	
R205	2200Ω	
R206	27K	

ITEM No.	RATING	REMARKS
R207	12K	
R208	4700Ω	
R209	220K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K201	Ant. Filter	470mmf, .6-1meg	330-1	Centralab RC-471 Sprague AC1-1
K202	Ant. Filter	470mmf, .6-1meg	330-1	Centralab RC-471 Sprague AC1-1

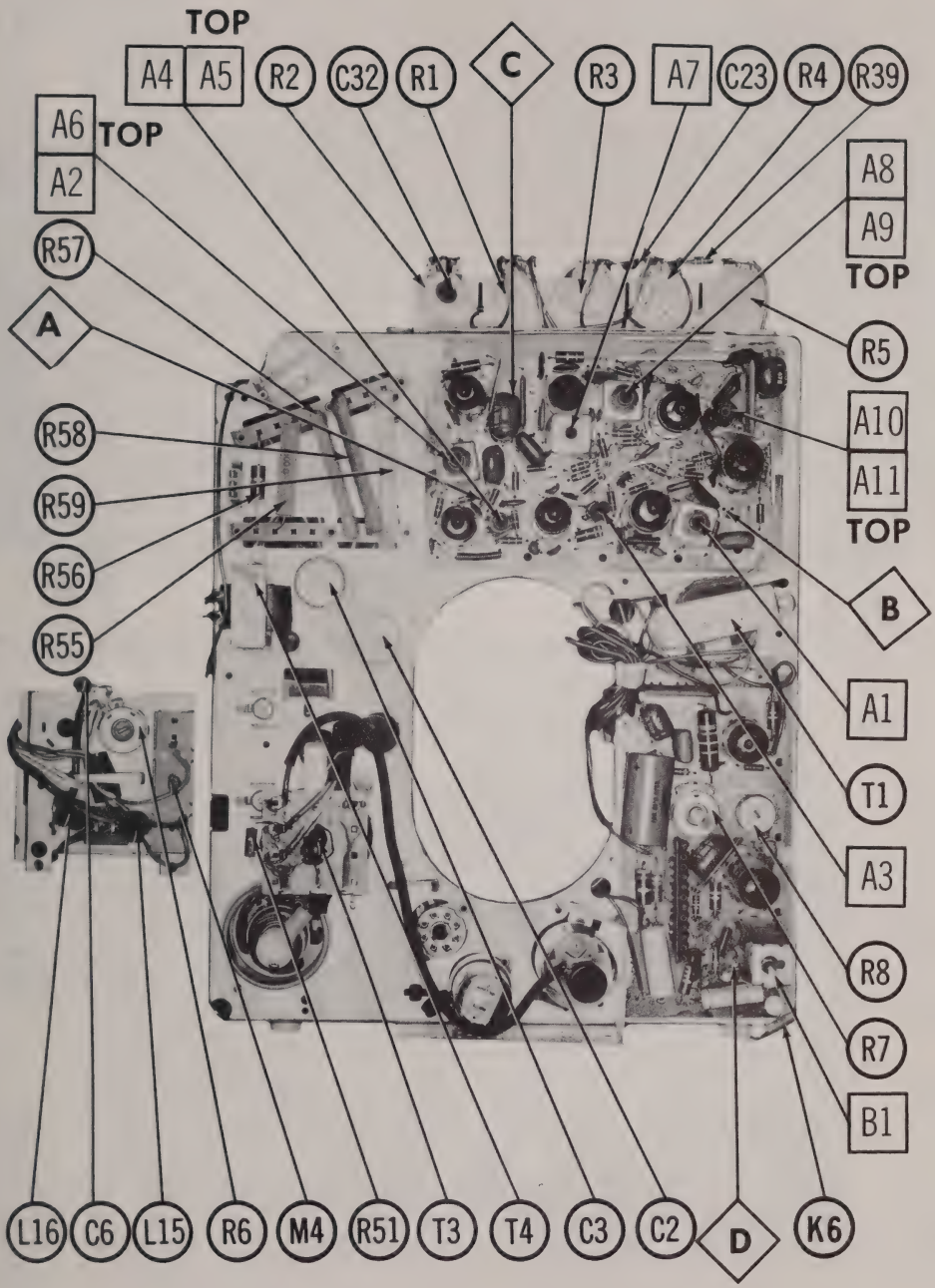
COILS (RF-IF)

ITEM No.	USE	SILVERTONE PART No.	NOTES
L201	Ant. Trans.	2309-5	
L202	RF Choke	310-4	
L203	RF Choke	310-4	
L204	Ant. Coils	2343-1	Channel 2-13 Includes Wafer Assembly
L205	RF Choke	363-7	
L206	RF Coils	2343-1	Channel 2-13 Includes Wafer Assembly
L207	RF Coil	301-23	
L208	Mixer Grid Coils	2343-1	Channel 2-13 Includes Wafer Assembly

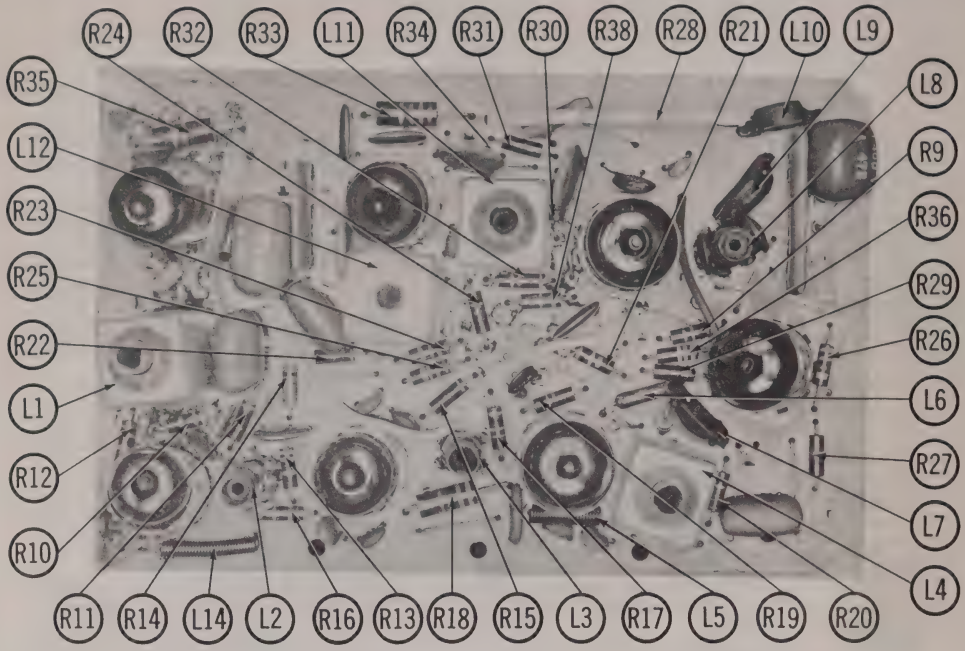
ITEM No.	USE	SILVERTONE PART No.	NOTES
L209	RF Choke	362-6	
L210	Osc. Coils	3434-9	Channel 2-13 Includes Wafer Assembly
L211	RF Choke	301-13	
L212	RF Choke	310-5	
L213	Mixer Plate Coil	2110-9	
L214	Fil. Choke	350-20	
L215	Fine Tuning Coil	3362-501	Includes Plunger Assembly

MISCELLANEOUS

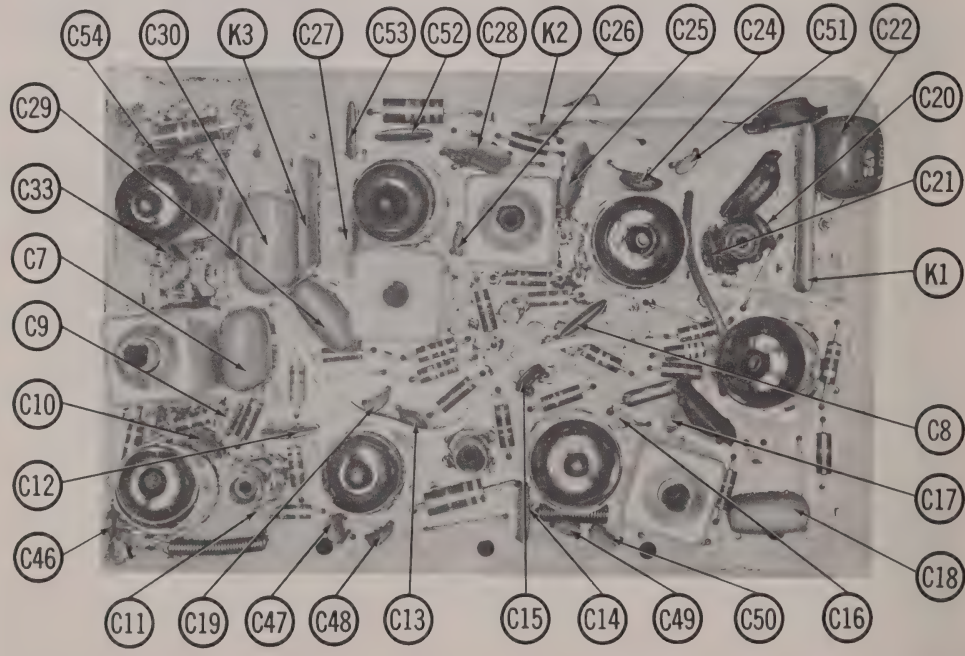
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M201	Selector Shaft	1752-83	Assembly



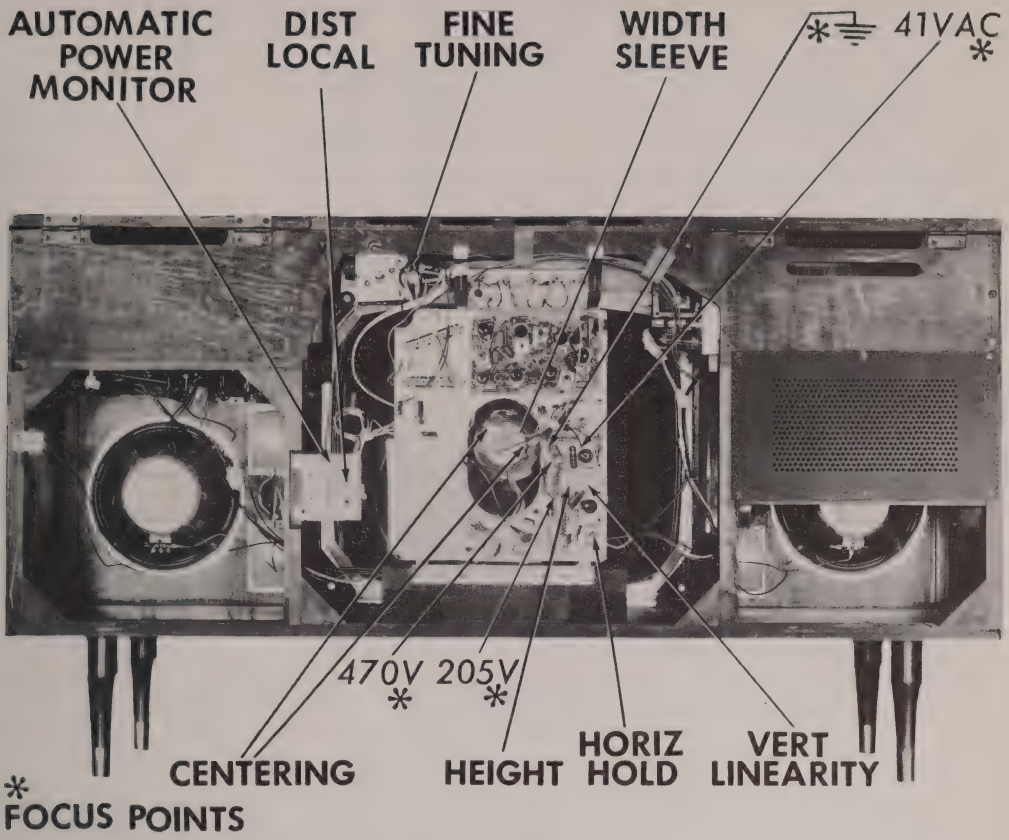
TV CHASSIS - TOP VIEW



VIDEO, SOUND, SYNC PRINTED BOARD - RESISTOR & INDUCTOR IDENT.



VIDEO, SOUND, SYNC PRINTED BOARD - CAPACITOR & MISC. IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station and adjust the Horizontal Hold until the picture synchronizes horizontally. If the picture cannot be synced with the Horizontal Hold, turn the Waveform Slug (B1) several turns out of the Coil Form from its original position. Readjust the Horizontal Hold until the picture synchronizes horizontally.

Connect the Vertical Amplifier of the scope thru a low capacity probe to point (D). Connect low side to chassis. Retouch the Horizontal Hold to synchronize the picture.

Adjust the Waveform Slug (B1) for a waveform similar to Fig. 2 with the sharp peak approximately 10% higher than the broad peak. Keep the picture in sync during this adjustment with the Horizontal Hold. Remove scope connection and retouch Horizontal Hold if necessary to synchronize picture horizontally.

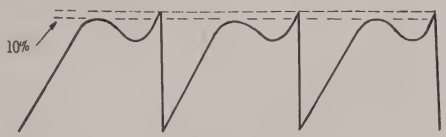


FIG. 2

DISASSEMBLY INSTRUCTIONS

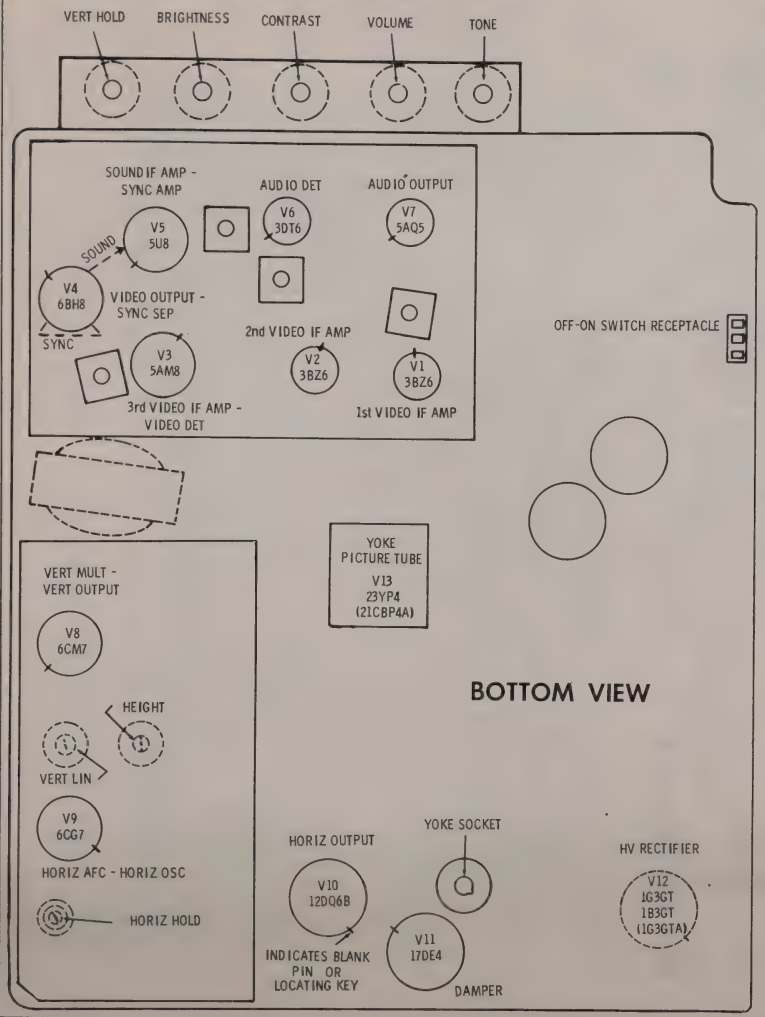
CHASSIS REMOVAL MODEL 1194

1. Remove 10 wood screws holding rear cover. Remove rear cover.
2. Remove 6 push-on type knobs in front of cabinet.
3. Remove 2 screws holding Reset Button and Local-Distant Control Panel.
4. Remove yoke plug, picture tube socket, high voltage lead, and leads from amplifier.
5. Remove 2 screws in front and 2 inside of cabinet holding front Trim Strip. Remove 2 screws holding Tuner from front and 2 at back of set holding Tuner Mounting Bracket.
6. Remove 2 chassis nuts at bottom and 2 at top.
7. Remove Tuner and Chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal.

TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	800K	56Ω	*17Ω	*16Ω	†2600Ω	†2600Ω	0Ω		
V2	3BZ6	800K	56Ω	*16Ω	*15Ω	†2600Ω	†2600Ω	0Ω		
V3	5AM8	220Ω	0Ω	†5200Ω	*15Ω	*14Ω	†5200Ω	0Ω	3300Ω	0Ω
V4	6BH8	0Ω	2.2meg	†470K	*13Ω	*14Ω	•100Ω	900K	†3800Ω	†4400Ω
V5	5U8	†27K	4Ω	†72K	*13Ω	*12Ω	†3800Ω	220Ω	5600Ω	†470K
V6	3DT6	5.2Ω	680Ω	*12Ω	*11Ω	†700K	†18K	560K		
V7	5AQ5	NC	220Ω	*11Ω	*10Ω	†1500Ω	†1200Ω	•0Ω		
V8	6CM7	†2100Ω	NC	0Ω	*7Ω	*8Ω	†• 3meg	• 1.1meg	2.2meg	• 2400Ω
V9	6CG7	†33K	480K	0Ω	*6Ω	*7Ω	†470Ω	800K	330K	NC
V10	12DQ6B	NC	*6Ω	NC	†6800Ω	680K	NC	*3Ω	0Ω	TOP CAP †50Ω
V11	17DE4	TP	NC	¶	NC	†2.5Ω	TP	*0Ω	*3Ω	
V12	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †470Ω
V13	23YP4	*8Ω	68K	Pin 6 †2.5Ω	Pin 10 †30Ω	Pin 11 • 200K	Pin 12 *10Ω			
V201	2CY5	• 12K	0Ω	*17Ω	*18Ω	†1600Ω	†12K	0Ω		
V202	5CL8	15K	†14K	0Ω	*18Ω	*19Ω	†3800Ω	†28K	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V11.
* MEASURED FROM PIN 7 OF V11.

NC NO CONNECTION
TP TIE POINT

PHOTOFACT® Folder

PRODUCTION CHANGE BULLETIN 251

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 487

WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V2387-1

Westinghouse Models H-K4000, U, H-K4001, U, H-K4002, U, H-K4100, U, H-K4101, U, H-K4102, U, H-K4103, U, H-K4200, U, H-K4201, U, H-K4202, U, H-K4300, U, H-K4400, H-K4401, H-K4402, H-K4403, H-K4500, H-K4501, H-K4502, H-K4503, H-K4601, H-K4602, H-K4800, H-T3700, U, H-T3701, U, H-T3702, U (Ch. V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1) were covered in PHOTOFACT Folder 2-Set 487.

The following changes were made during late production.

COMPONENT CHANGES

C6 is decreased from .15mfd to .033mfd.

C37 may be either a .0047mfd or a .22mfd.

C41 is omitted.

C46 is decreased from 10000mmf to 6800mmf.

C50 is increased from 2200mmf to 10000mmf.

K1 is omitted.

K2 is omitted.

L13 is changed to Part #230V034H13.

L17 is changed to Part #230V034H04.

R25 is increased from 8200Ω to 10K.

R34 is increased from 15K to 18K.

R40 is increased from 1meg to 1.5meg.

(Continued On The Reverse Side)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 499

KNIGHT MODEL KN-135B

Knight Model KN-135 (92SU431) was covered in PHOTOFACT Folder 9 - Set 499.

Model KN-135B which is electrically similar except for the following changes is added with the publication of this bulletin.

SWITCHES CHANGED

M5 (Stereo-Monaural Switch) is changed from a 3 position DP Slide Type to a 2 position SPDT Slide Type.

M6 (Stereo-Monaural Switch) is changed from a 3 position DP Slide Type to a 2 position SPDT Slide Type.

TUNING INDICATOR ADDED

A Tuning Indicator (EM84) is added. A partial schematic diagram showing the added circuit is given in this bulletin.

(Continued On The Reverse Side)

PRODUCTION CHANGE
BULLETIN 251

PRODUCTION CHANGE
BULLETIN 251

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 514 FOLDER 3

R41 is increased from 5600Ω to 6200Ω.

R43 is increased from 1.5meg to 2.2meg.

R45 is omitted.

R46 is increased from 8200Ω to 12K.

R48 is decreased from 1meg to 470K.

R70 is decreased from 39K to 8200Ω

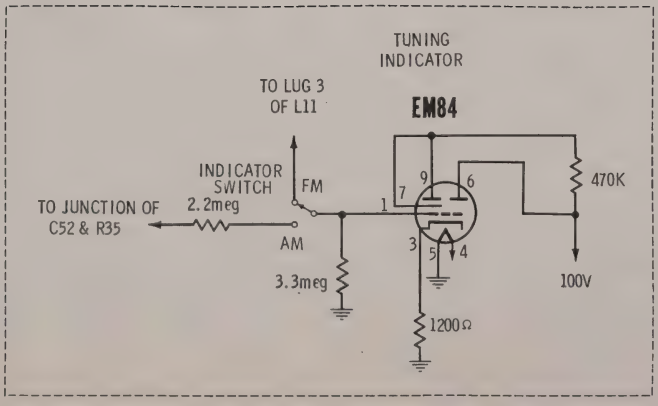
COMPONENTS ADDED

A .01mfd Capacitor is added from R48 to the junction of C47, R53.

A 470K $\frac{1}{2}$ Watt Resistor is added from R48 to the 680V Boost Line.

A 150mmf Capacitor and a 220K $\frac{1}{2}$ Watt Resistor in parallel is added from pin 2 of V4 (6EB8) to R43.

A 4700Ω Resistor is added from R34 to pin 6 (6BZ6).



SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 8 IN SET 385

TELECTRO MODEL 1965

Telectro Model 1960 was covered in PHOTOFACT Folder 8 - Set 385.

Model 1965 which is electrically identical is added with the publication of this bulletin. The following mechanical changes are made.

MECHANICAL CHANGES

Ref. No. 2 (Wind-Rewind Knob) is changed to Part #TK-227-1.

Ref. No. 3 (Off-On-Volume Knob) is changed to Part #TK-191-1.

Ref. No. 3A (Function Knob Assembly) is changed to Part #TA-1443.

Ref. No. 4 (Rear Escutcheon Assembly, Complete) is changed to Part #TA-1442. Omit Part #TE-261 and Part #TP-887.

Ref. No. 5 (Front Escutcheon Assembly, Complete) is changed to Part #TA-1441. Omit Part #TE-262 and Part #TP-886.

Ref. No. 7 (Spindle Assembly) is changed to Part #TS-2152-1.

Ref. No. 26 (Record Head Pressure Pad) is changed to Part #TP-863.

Ref. No. 44 (Motor Pulley Assembly) is omitted. This is included with Ref. No. 50 (Motor and Pulley Assembly).

Ref. No. 74 (Spring, Fan Adapter Bushing) is omitted.

CABINET CHANGE

The cabinet is changed to Part #TC-2002.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 12 IN SET 427

TELECTRO MODEL 1985

Telectro Model 1970 was covered in PHOTOFACT Folder 12 - Set 427.

Model 1985 which is electrically identical is added with the publication of this bulletin. The following mechanical changes are made.

MECHANICAL CHANGES

Ref. No. 2 (Function Selector Knob) is changed to Part #TA-1426.

Ref. No. 3 (Record Knob) is changed to Part #TA-1427.

Ref. No. 4 (Wind-Rewind Knob) is changed to Part #TK-243-1.

Ref. No. 6 (Rear Escutcheon) is changed to Part #TE-274-2.

Ref. No. 7 (Volume Control Knob) is changed to Part #TA-1428.

Ref. No. 8 (Tone Control Knob) is changed to Part #TK-241-1.

Ref. No. 10 (Front Escutcheon Assembly) is changed to Part #TA-1429.

Ref. No. 13 (Spindles) is changed to TS-2152.

Ref. No. 106 (Case & Cover) is changed to Part #TC-1990.

Ref. No. 107 (Trim Channel) is changed to Part #TC-1692-1.

PART NUMBERS ADDED

C1A, B, C (Electrolytic Capacitor) is Part #TL-1717.

C2 (Electrolytic Capacitor) is Part #TL-1718.

C3 (Electrolytic Capacitor) is Part #TL-1550.

L1 (Bias Osc.) is Part #TC-1510.

M1 (Play Record Head Assembly) is Part #TH-494.

M2 (#NE51, Record Level) is Part #TL-174.

M3 (Record-Idle-Play Switch) is Part #TS-1670.

SP2 (Speaker) is changed to Part #TS-1927.

PHOTOFACT® Folder

**ADMIRAL CHASSIS
12D1, 12D1A**

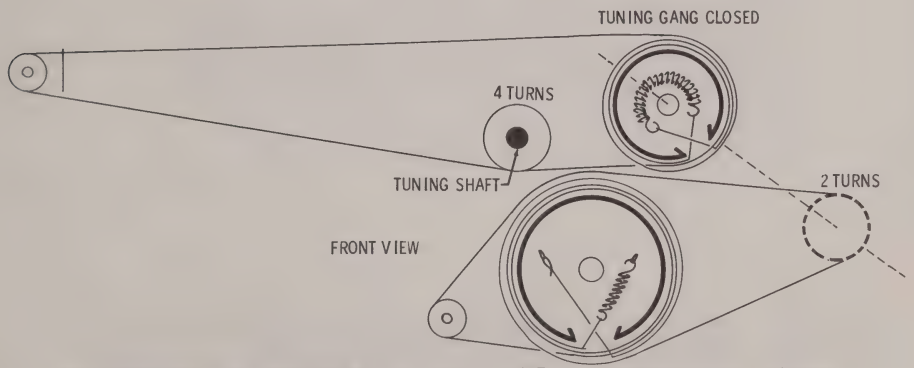
ADMIRAL CHASSIS
12D1, 12D1A

ADMIRAL CHASSIS
12D1, 12D1A

TRADE NAME	Admiral Models Y1012, Y1019, Y1031, Y1032, Y1033 (Ch. 12D1) Y1051, Y1052, Y1053, Y1079 (Ch. 12D1A) SS1041, SS1042, SS1043, SS1069 (External Speaker Unit)
MANUFACTURER	Admiral Sales Corp., Service Div., 903 Morrissey Drive, P. O. Box 845, Bloomington, Ill.
TYPE SET	AC Operated 12 Tube FM-AM Receiver With Stereo Amplifier And 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 110 Watts, 1 Amp. @117 Volts AC (Less Motor)
TUNING RANGES — BROADCAST	535 - 1620KC FREQ. MOD. 88 — 108MC

MODELS Y1012, Y1019, Y1031, Y1032 USE RECORD CHANGER RC6E9J-16Y, RC6E9K-16Y OR RC6E9M-16Y. MODELS Y1051, Y1052, Y1053 Y1079 USE RECORD CHANGER RC6E9J-18Q, RC6E9K-18Q OR RC6E9M-18Q. FOR SERVICE INFORMATION — SEE SIMILAR ADMIRAL RC607 SERIES — PHOTOFACT SET 398 FOLDER 7 OR RECORD CHANGER MANUAL RC-11

DIAL CORD STRINGING



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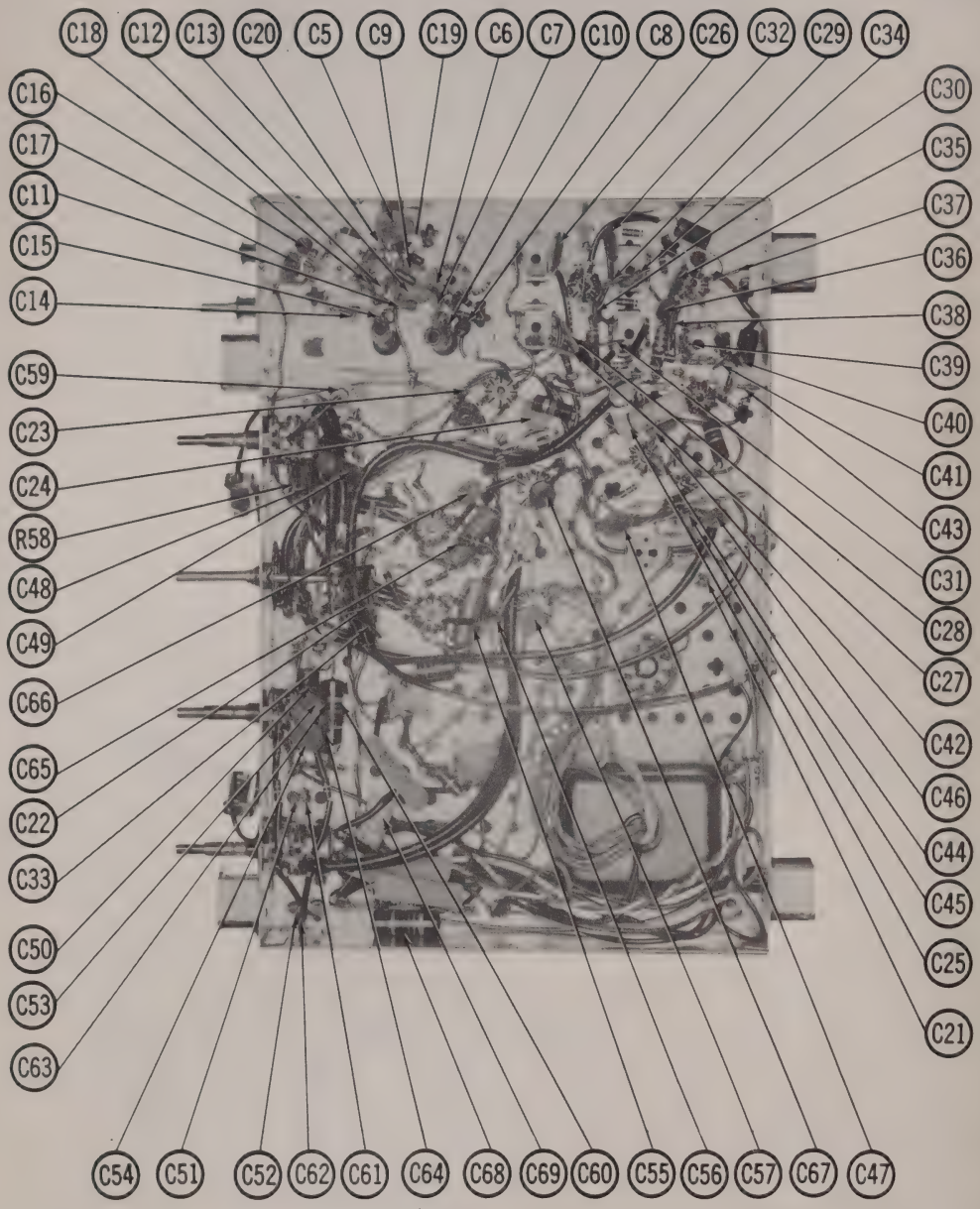
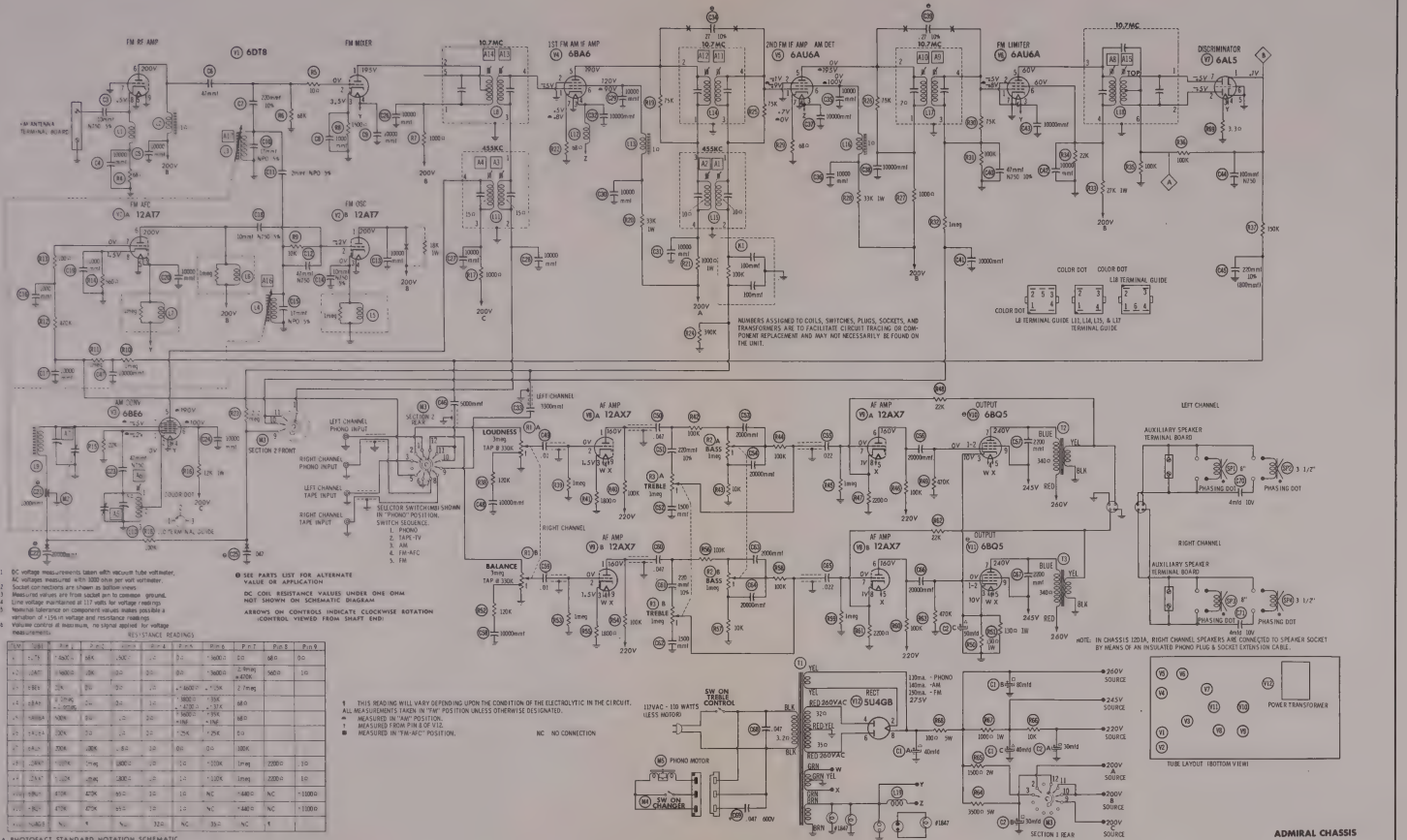
SET 514 FOLDER 4



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

(RESISTANCE READINGS)

TUBE	SOCKET	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
1	1-7	*.6MEG	.5MEG	.5MEG	1.2Ω	0Ω	*.360KΩ	0Ω	68Ω	0Ω
2	1-7	*.680Ω	20K	13Ω	22Ω	0Ω	*.360KΩ	2.4meg ±420K	560Ω	1Ω
3	1-8	22K	15Ω	0Ω	0Ω	*.680Ω	*125K	2.7meg		
4	1-8	2.2meg ±200K	22K	0Ω	0Ω	1Ω	*.680Ω + 470Ω	33K + 33K	68Ω	
5	1-8	470K	470K	0Ω	0Ω	2Ω	*.360Ω + 470Ω	*39K + 1MEG	68Ω	
6	1-8	220K	15Ω	0Ω	0Ω	0Ω	*25K	*25K	0Ω	
7	1-8	220K	220K	0.8Ω	1Ω	0Ω	0Ω	100K		
8	1-8	1.2MEG	1.2MEG	1meg	1800Ω	1Ω	0Ω	*100K	1meg	2200Ω	1Ω
9	1-8	1.2MEG	1.2MEG	0.8MEG	1800Ω	1Ω	1Ω	*100K	1meg	2200Ω	1Ω
10	1-8	470K	470K	470K	0Ω	1Ω	1Ω	NC	*440Ω	NC	*10000Ω
11	1-8	470K	470K	470K	0Ω	1Ω	1Ω	NC	*440Ω	NC	*10000Ω
12	1-8	NC	1	NC	32Ω	32Ω	NC	33Ω	NC	1	

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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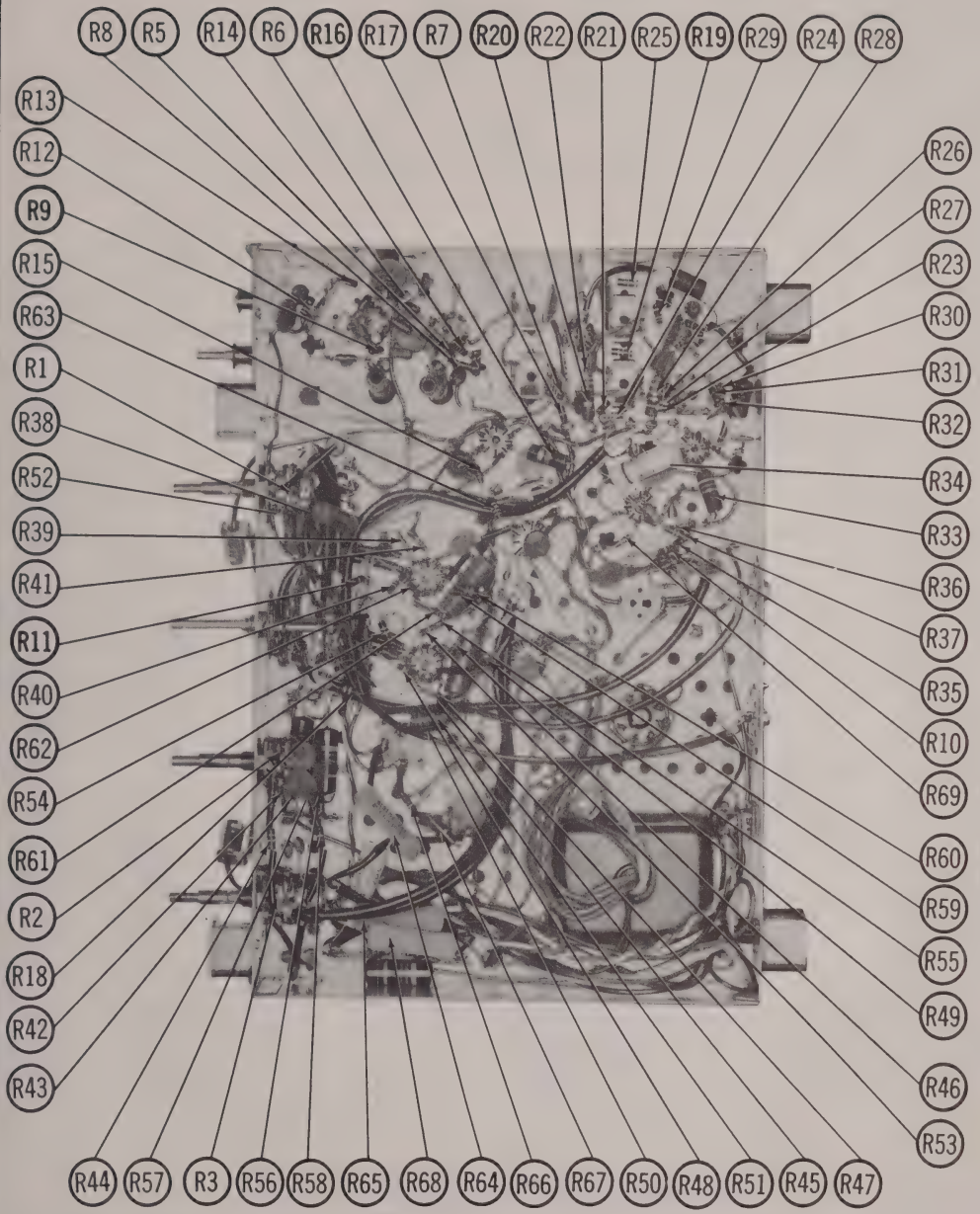
1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT. ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 8 OF V12.
■ MEASURED IN "FM-AFC" POSITION.

NOTE: IN CHASSIS 12D1A, RIGHT CHANNEL SPEAKERS ARE CONNECTED TO SPEAKER SOCKET BY MEANS OF AN INSULATED PHONO PLUG & SOCKET EXTENSION CABLE.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loudness control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3, A4, A8 thru A15.GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A7.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to Antenna stator lug of AM tuning gang. (front section). Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	535KC	Tuning gang fully closed.	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals with 150Ω in each lead.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Across FM Antenna terminals with 150Ω in each lead.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. thru 47K to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum a amplitude and straightness of cross-over lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 150Ω in each lead.	98MC (Unmod.)	(FM) 98MC	DC probe thru 1meg to point Ⓐ. Common to chassis.	A16, A17	Adjust for maximum deflection.

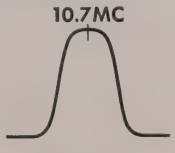


FIG. 1

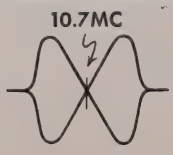
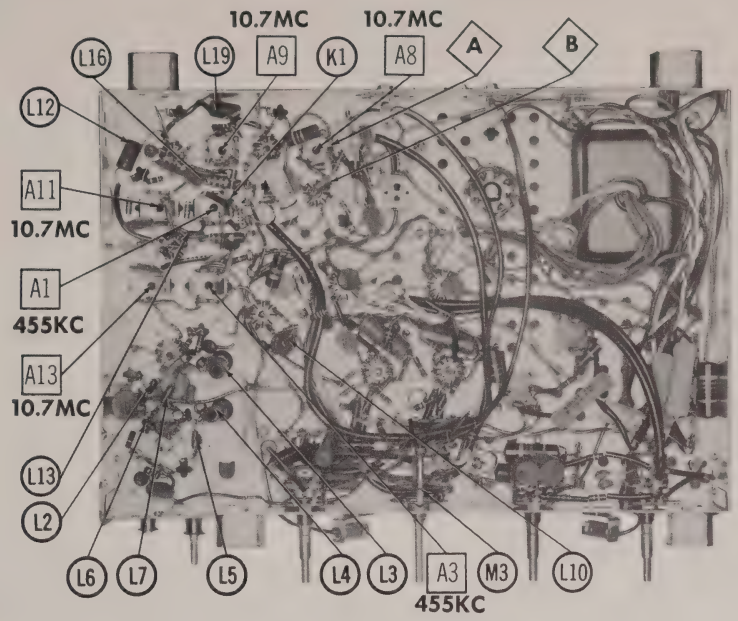
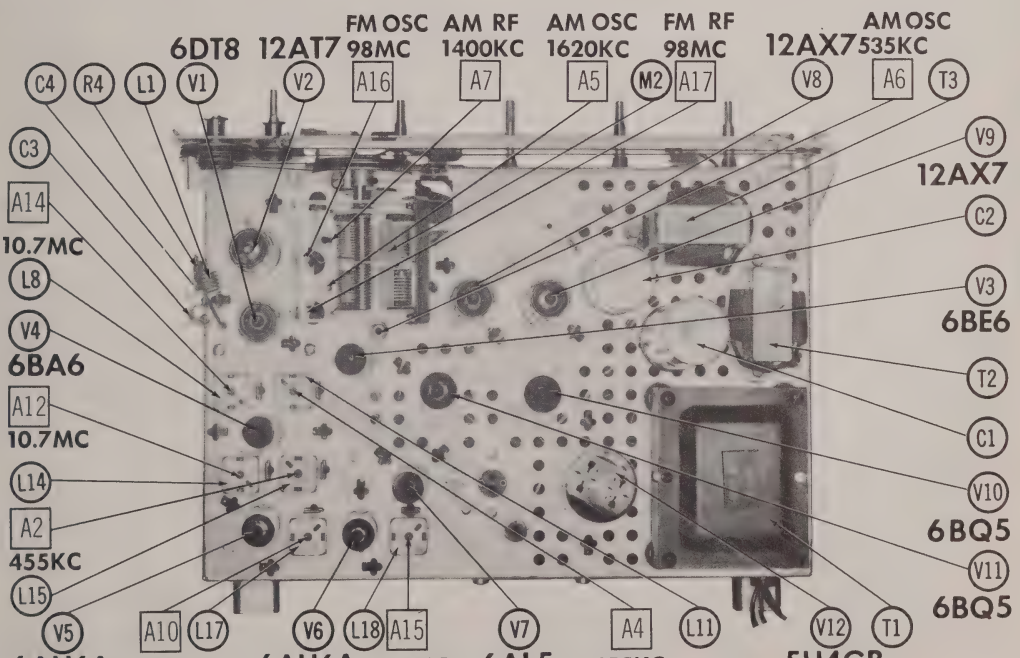


FIG. 2



CHASSIS BOTTOM VIEW-ALIGMENT, INDUCTOR & MISC. IDENT.



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amp. -Mixer	6DT8
V2	FM Osc. -AFC	12AT7
V3	AM Converter	6BE6
V4	1st FM - AM IF Amp.	6BA6
V5	2nd FM IF Amp. -AM Det.	6AU6A
V6	FM Limiter	6AU6A
V7	Discriminator	6AL5

ITEM No.	USE	TYPE
V8	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V9	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V10	Left Channel Output	6BQ5 (EL84) *
V11	Right Channel Output	6BQ5 (EL84) *
V12	Rectifier	5U4GB

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	67D7-102	AFH4-79-40	B0450	FP377	TMD-2480	TVL-2764	
B	■80	400			BR8045	TC78	TD-80-450	TVA-1716	
C	▲40	400							
C2A	▲30	350	67D7-101	AFH3-111	C0870	FP333.7	TMT-3370	TVL-3636.5	
B	■30	350							
C	▲50	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10 N750 5%		N750-DI 10	DTN-10	C10Q1U		CN7-410	10TCU-Q10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	47		SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C7	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	17 NPO 5%			TCZ-18	C10Q18C		CNO-418	10TCC-Q18
C11	2 NPO 5%		NPO-SI 2.0	TCZ-2R2	C10V22C		CNO-522	10TCC-V22
C12	47 N750		N750-SI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	10 N750 5%		N750-DI 10	DTN-10	C10Q10U		CN7-410	10TCU-Q10
C15	17 NPO 5%			TCZ-18	C10Q18C		CNO-418	10TCC-Q18
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C18	10 N750 5%		N750-DI 10	DTN-10	C10Q1U		CN7-410	10TCU-Q10
C19	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	1000		EF-001	MFT-1000		CCF-102	CT280A	
C22	20000	Note 1	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C23	47 N750		N750-SI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	.047 200V	Note 1	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C34	.27 10%	Note 1						
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	.27 10%	Note 1						
C40	47 N750 10%		N750-DI 47	DTN-47	C10Q47C	CCTN-470	CN7-447	10TCU-Q47
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	100 N750		N750-SI 100	TCN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C45	220 10%	(800) †	DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C46	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C47	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C49	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C50	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C51	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C52	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C53	2000		BPD-002	DD-202	BYA10D2	CCD-220	B-220	5HK-D20
C54	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C55	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C56	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C57	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C58	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C59	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C60	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C61	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C62	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C63	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C64	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C65	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C66	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C67	2200		BPD-0022	DD-222	BYA10D2	CCD-222	B-222	5HK-D22
C68	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C69	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C70	4mfd 10V	#65B13-5	P1589Z-4.0					
C71	4mfd 10V	#65B13-5	P1589Z-4.0					

Admiral Part Number.
Note 1. Not used in Run 10.
† Alternate Value

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3meg	½	75D46-15 *					Loudness, Right Channel
	330K Tap							
B	3meg	½						Balance, Left Channel
	330K Tap							
R2A	1meg		75D46-10 *					Bass, Left Channel
B	1meg							Bass, Right Channel
R3A	1meg		75D46-9 *					Treble, Left Channel
B	1meg							Treble, Right Channel
C	Switch							Power On-Off

* "Clutch" type control. To adjust individual channel, hold inner or outer shaft and turn the other.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	68Ω	
R5	10Ω	
R6	68K	
R7	1000Ω	
R8	1500Ω	
R9	10K	
R10	1meg	
R11	1meg	
R12	470K	
R13	100Ω	
R14	560Ω	

ITEM No.	RATING	REMARKS
R15	22K	
R16	12K 1W	
R17	1000Ω	
R18	100K	
R19	75K	
R20	33K 1W	
R21	1000Ω	
R22	68Ω	
R23	2.2meg	
R24	390K	
R25	75K	

ITEM No.	RATING	REMARKS
R26	75K	
R27	1000Ω	
R28	33K 1W	
R29	68Ω	
R30	75K	
R31	100K	
R32	1meg	
R33	27K 1W	
R34	22K	
R35	100K	
R36	100K	

RESISTORS (IRC or EQUIVALENT) (cont)

ITEM No.	RATING	REMARKS
R37	150K	
R38	120K	
R39	1meg	
R40	100K	
R41	1800Ω	
R42	100K	
R43	10K	
R44	100K	
R45	1meg	
R46	100K	
R47	2200Ω	

ITEM No.	RATING	REMARKS
R48	22K	
R49	470K	
R50	130Ω 1W	
R51	130Ω 1W	
R52	120K	
R53	1meg	
R54	100K	
R55	1800Ω	
R56	100K	
R57	10K	
R58	100K	

ITEM No.	RATING	REMARKS
R59	1meg	
R60	100K	
R61	2200Ω	
R62	22K	
R63	470K	
R64	3500Ω 5W	IRC#PW5-3500Ω
R65	1500Ω 2W	
R66	10K	
R67	1000Ω 1W	
R68	100Ω 5W	IRC#PW5-100Ω
R69	3.3Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	FM Ant. Coil	73D20-71				
L2	RF Choke	73B31-4	BC-566	4622	RTC-8523	12uh
L3	FM RF Coil	69B233-2				Includes C10
L4	FM Osc. Coil	69B233-2				Includes C11
L5	Cathode Choke	73B31-5 ①	BC-561 *	4602 *	RTC-8515 *	1uh
L6	RF Choke	73B31-5 ①	BC-561 *	4602 *	RTC-8515 *	1uh
L7	Fil. Choke	73B31-5 ①	BC-561 *	4602 *	RTC-8515 *	1uh
L8	1st FM IF Trans.	72D28-72				
L9	Loopstick	69B229-2	BC-418	705-A		
L10	AM Osc. Coil	69B243-1	BC-393	70-OSC	RTC-8647	
L11	1st AM IF Trans.	72D28-70	BC-352	12-C1	RTC-8632	
L12	Fil. Choke	73A2-14	BC-562	4604	RTC-8516	1.3uh
L13	RF Choke	73B31-4	BC-566	4622	RTC-8523	12uh
L14	2nd FM IF Trans.	72D28-68	FM-254	1463	RTC-8599	
L15	2nd AM IF Trans.	72D28-71	BC-353	12-C2	RTC-8633	
L16	RF Choke	73B31-4	BC-566	4622	RTC-8523	12uh
L17	3rd FM IF Trans.	72D28-68	FM-254	1463	RTC-8599	
L18	Discriminator	72D28-73	FM-253	1464	RTC-8665	
L19	Fil. Choke	73A2-14	BC-562	4604	RTC-8516	1.5uh

① Wound On 1meg Resistor.
* Parallel With 1meg Resistor.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SFC. 2						
T1	117V @ 1A	520VCT @ .160A	5V @ 3A	80D35-19					
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @ 2.1A	6.3VCT @ 2.4A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.						
T2	6100Ω	3-4Ω	79D56-16	A-3019	A-8092	24S11	S-5Z	
T3	6100Ω	3-4Ω	79D56-16	A-3019	A-8092	24S11	S-5Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA: ADMIRAL PART No.	QUAM PART No.	NOTES
	SIZE	FIELD	V. C. IMP.			
SP1	8"	PM	3-4Ω	78C151-3	8A31	
SP2	3½"	PM	3-4Ω	78C148-1	3A15TZ4.4	
SP3	8"	PM	3-4Ω	78C151-3	8A31	
SP4	3½"	PM	3-4Ω	78C148-1	3A15TZ4.4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA	
K1	AM Det. RF Filter	100mmf, 100mmf, 100K	63A3-2	Centralab Sprague	PC-326 D-4

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		NOTES
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	409B33-1-1	98C15-100* or 98C15-102* and 98C15-101*	13TB	Not Req.	26S	S1-1 * & S3-3*	8TA4-S	N-8TA-S *	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M2	Tuning Cap.	68C71-2	2 Gang (Ant. 12-356mmf, Osc. 8-104mmf)
M3	Switch	77B97-1	Function Selector (Rotary Wafer Type)
M4	Switch	408A1	Reject Off-On (Part of Changer)
M5	Motor	407C28	Turntable Drive (Part of Changer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Crystal	24C30-1	
Knob	20D34-2	Tuning
Knob	20D34-1	Inner, Chrome, Loudness, Bass, Treble
Knob	33C359-2	Outer, Slate Gray, Loudness, Bass, Treble
Knob	700A208-1	Function, Chrome & Gray
Cabinet	35E557-2	Mahogany, Model Y1012
Cabinet	35E557-9	Fruitwood, Model Y1019
Cabinet	35E565-1	Walnut, Model Y1031
Cabinet	35E565-2	Mahogany, Model Y1032
Cabinet	35E565-3	Blonde, Model Y1033
Cabinet	35E566-1	Walnut, Model Y1051
Cabinet	35E566-2	Mahogany, Model Y1052
Cabinet	35E566-3	Blonde, Model Y1053
Cabinet	35E561-9	Fruitwood, Model Y1079
Cabinet	35E548-1	Walnut, Model SS1041
Cabinet	35E548-2	Mahogany, Model SS1042
Cabinet	35E548-3	Blonde, Model SS1043
Cabinet	35E576-9	Fruitwood, Model SS1069
Leg	37D168-79	Walnut, Models SS1041, Y1051
Leg	37D168-52	Mahogany, Models SS1042, Y1052
Leg	37D168-53	Blonde, Models SS1043, Y1053

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

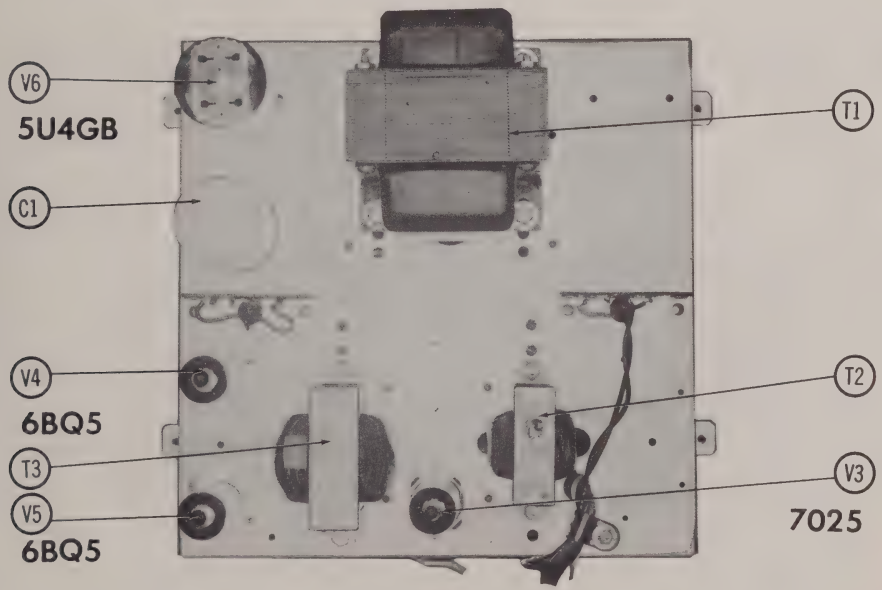
PHOTOFACT® Folder

AIRLINE MODELS WG-2687A, WG-2688A, WG-2697A

AIRLINE MODELS WG-2687A, WG-2688A, WG-2697A

TRADE NAME	Airline Models WG-2687A, WG-2688A, WG-2697A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated 6 Tube Stereo Phono Amplifier with 4 Speed Automatic Record Changer
POWER SUPPLY	105-125 Volts AC, 60 Cycles RATING 75 Watts, .7 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #28A236 USED IN MODELS WG-2687A OR WG-2688A AND PART #28A243 USED IN MODEL WG-2697A - SEE V-M 1201 - PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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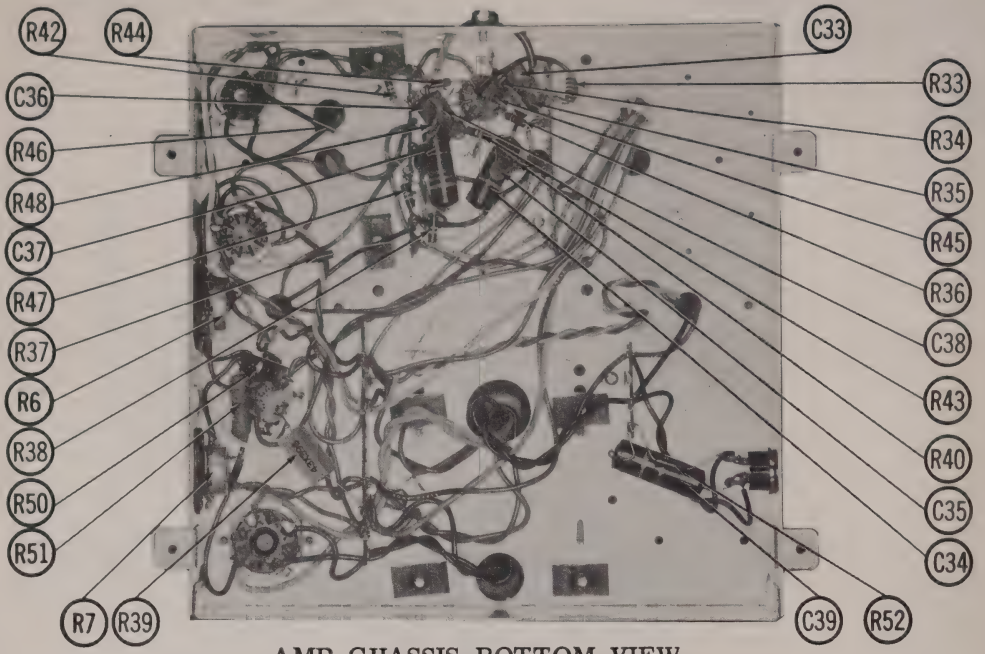
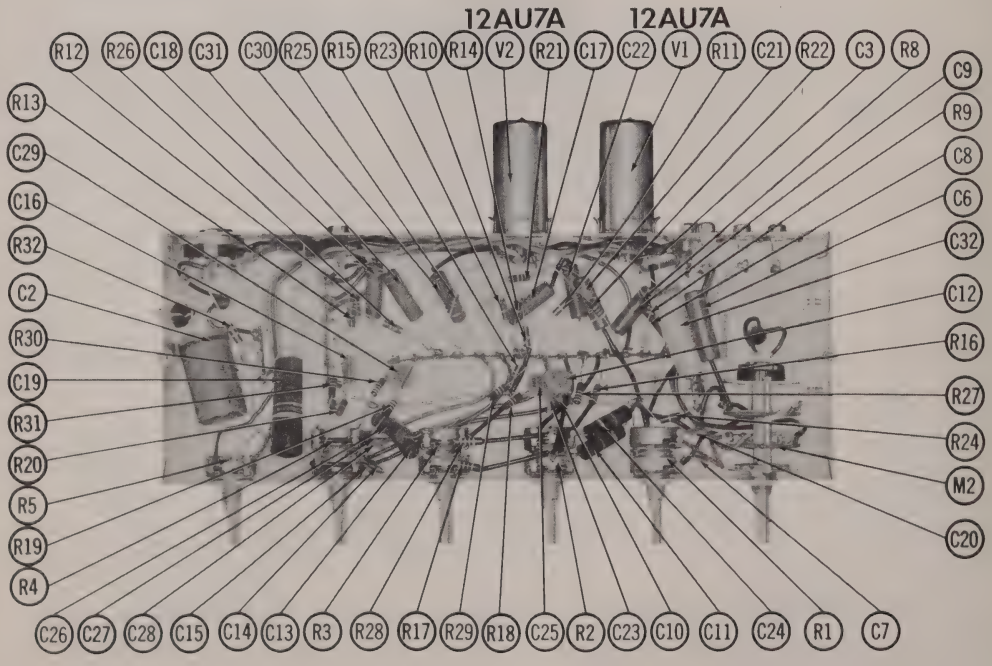
KT117

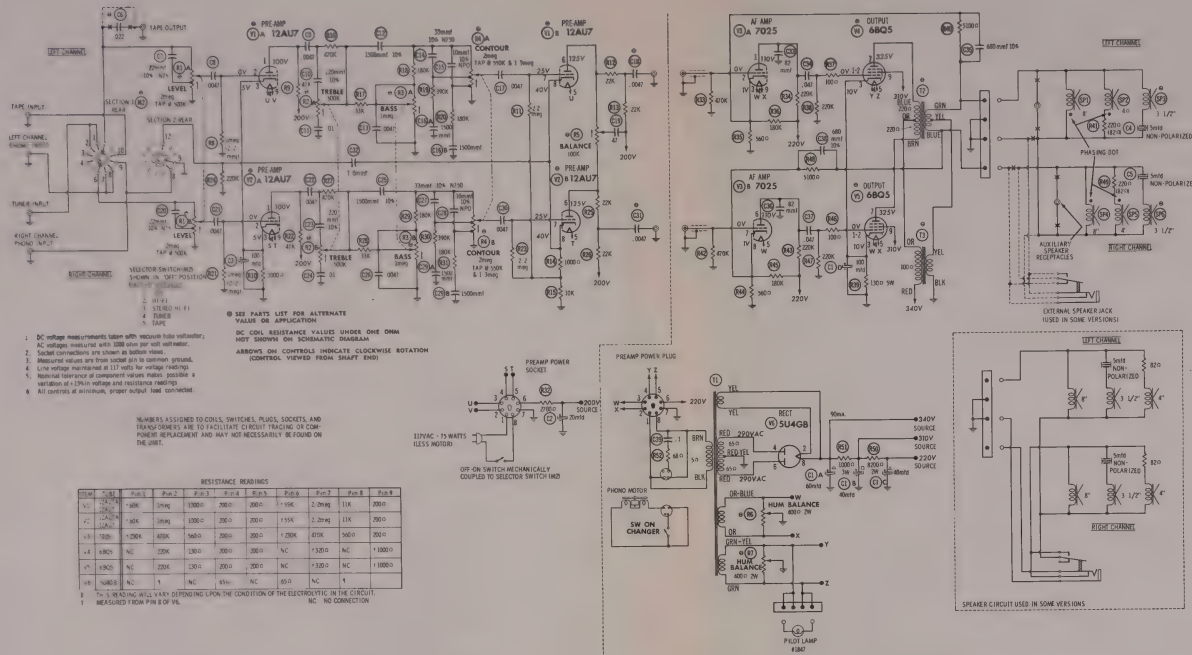
SET 514 FOLDER 5



AMP CHASSIS-BOTTOM VIEW



PREAMP CHASSIS-BOTTOM VIEW



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

Tube	Type	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7 (ECC82)	100K	1Meg	1000Ω	200Ω	200Ω	100K	2.2Meg	11K	200Ω
V2	12AU7 (ECC82)	100K	1Meg	1000Ω	200Ω	200Ω	115K	2.2Meg	11K	250Ω
V3	7025	150K	470K	560Ω	200Ω	200Ω	150K	470K	560Ω	250Ω
V4	6BQ5	NC	220K	130Ω	200Ω	200Ω	NC	320Ω	NC	1000Ω
V5	6BQ5	NC	220K	130Ω	200Ω	200Ω	NC	320Ω	NC	1000Ω
V6	5U4GB	NC	1	NC	615Ω	NC	615Ω	NC	1	

1 The 1 READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
NC - NO CONNECTION
† MEASURED FROM PIN 8 OF V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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AIRLINE MODELS WG-2687A, WG-2688A, WG-2697A

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE *	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Preamp.	12AU7 (ECC82) *	V4	Left Channel Output	6BQ5 (EL84) *
V2	Right Channel Preamp.	12AU7A (ECC82) *	V5	Right Channel Output	6BQ5 (EL84) *
V3	Left Channel AF Amp. - Right Channel AF Amp.	7025	V6	Rectifier	5U4GB

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	● 60	400	45X462	AFH4-86-20	D0674	FP430.9	TMT-3658	TVL-4739.4	
B	■ 40	400			BBR100-25	TC2501	TD-80-450	TVA-1207	
C	▲ 40	400							
D	100	25							
C2	20	350	45X455	PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C3	100	10	45X459	SRE12V100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C4	5	10NP	45X426	PRS7405	BBR4-150	TCN105		TVANS-1110 *	
C5	5	10NP	45X426	PRS7405	BBR4-150	TCN105		TVANS-1110 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.022	400V		Note 1	P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C7	22	N75	10%	#80X32						
C8	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C9	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C10	220		10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C11	.01	400V			P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C12	1500		10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C13	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C14	33	N750	10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C15	10	NPO	10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C16A	1500				BPD-2X0015	DD2-152	BYA10D15	CCD-152	GP215	5HK-2D15
B	1500						BYA10D15	CCD-152	GP215	
C17	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C18	.0047	400V		Note 2	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C19	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C20	22	N75	10%	#80X32						

FIXED CAPACITORS (cont)

ITEM No.	RATING			REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C21	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C22	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C23	220		10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C24	.01	400V			P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C25	1500		10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C26	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C27	33	N750	10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C28	10	NPO	10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C29A	1500				BPD-2X0015	DD2-152	BYA10D15	CCD-152	GP215	5HK-2D15
B	1500						BYA10D15	CCD-152	GP215	
C30	.0047	400V			P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C31	.0047	400V		Note 2	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C32	1.0	100V			P288N-1.0		CUB2W1	1DP-5-105	GEM-2I	2TM-M1
C33	82				1467-000082	DD-820	5W5Q82	CM-20B-820		1FM-482
C34	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C35	680		10%		DI-680	DD-681		CCD-681	GP368	10TS-T68
C36	82				1467-000082	DD-820	5W5Q82	CM-20B-820		1FM-482
C37	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C38	680		10%		DI-680	DD-681		CCD-681	GP368	10TS-T68
C39	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

Note 1. Not used in Models WG-2687A, WG-2688A.
Note 2. Models WG-2687A, WG-2688A use .022mfd in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg 500K Tap		36X423 ①	BT-174 ♦			FA26T55	Level, Left Channel
B	2meg 500K Tap			STR-174 ♦			RU26T55	Level, Right Channel
C	Shaft			Not Req.			CS3500	
R1A	2meg 700K Tap		36X411 ②				FB26T750	Level
B	2meg 700K Tap						RU26T750	Level
C	Shaft						CS3500	
R2A	500K		40X475 ①	B-60	AD47-500K-Z		FA55A	Treble, Left Channel
B	500K			SR-60	Not Req.		RU55A	Treble, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R2A	500K		40X457 ②	B-60	AD47-500K-Z		FA55A	Treble
B	500K			SR-60	Not Req.		RU55A	Treble
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg		40X476 ①	B-70	AD47-1meg-Z		FA16A	Bass, Left Channel
B	1meg			SR-70	Not Req.		RU16A	Bass, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R3A	1meg		40X458 ②	B-70	AD47-1meg-Z		FA16A	Bass
B	1meg			SR-70	Not Req.		RU16A	Bass
C	Shaft			Not Req.	FS-3		CS3500	
R4A	2meg *		36X424 ①	BT-175			FA26DT155	Contour, Left Channel
B	2meg *			STR-175			RU26DT155	Contour, Right Channel
C	Shaft			Not Req.			CS3500	
R4A	2meg †		36X408 ②				FA26DT155	Contour
B	2meg †						RU26DT155	Contour
C	Shaft						CS3500	
R5A	100K		40X477 ①	B-40	A47-100K-S	Q11-128	U41	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	100K		40X459 ②	B-40	A47-100K-S	Q11-128	U41	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	400Ω	2(WW)	40X452	WN-401	A43-400	W11-202	R500L	Hum Balance, Left Channel
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R7A	400Ω	2(WW)	40X452	WN-401	A43-400	W11-202	R500L	Hum Balance, Right Channel
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

① Used in Model WG-2697A.
② Used in Model WG-2687A, WG-2688A.

* Taps ⓐ 550K and 1.3meg.
† Taps ⓐ 750K and 1.5meg.

♦ Omit Tap 1.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	1meg	(2.2meg) †
R9	47K	
R10	1000Ω	
R11	2.2meg	
R12	22K	
R13	22K	
R14	1000Ω	
R15	10K	
R16	470K	
R17	33K	
R18	180K	
R19	390K	
R20	180K	
R21	1meg	(2.2meg) †
R22	47K	

ITEM No.	RATING	REMARKS
R23	2.2meg	
R24	220K	
R25	22K	
R26	22K	
R27	470K	
R28	33K	
R29	180K	
R30	390K	
R31	180K	
R32	2700Ω	
R33	470K	
R34	220K	
R35	560Ω	
R36	180K	
R37	100Ω	

ITEM No.	RATING	REMARKS
R38	220K	
R39	130Ω 5W	IRC #PW5-130Ω
R40	5100Ω	
R41	220Ω	(82Ω) *
R42	470K	
R43	220K	
R44	560Ω	
R45	180K	
R46	100Ω	
R47	220K	
R48	5100Ω	
R49	220Ω	(82Ω) *
R50	8200Ω 2W	
R51	1000Ω 3W	IRC #PW5-1000Ω
R52	68Ω	

† Used in Models WG-2687A, WG-2688A.

* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V	580VCT	5V	53X379					
		ⓐ .7A	ⓐ .090A						
			ⓐ 3A						
	SEC. 3	SEC. 4	SEC. 5						
	6.3V	6.3V							
	ⓐ 1.2A	ⓐ 1.1A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2100Ω	3-4Ω	51X205					① Alternate Part #51X204.
T3	2700Ω CT	3-4Ω	51X204-A ①					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	8"	PM	6-8Ω	12A570	8A31Z7.9	* Alternate Part #12A571.
SP2	4"	PM	3-4Ω	12A543	4A07	
SP3	3½"	PM	3-4Ω	12A571A *	3A15T	
SP4	8"	PM	6-8Ω	12A570	8A31Z7.9	
SP5	4"	PM	3-4Ω	12A543	4A07	
SP6	3½"	PM	3-4Ω	12A571A *	3A15T	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	AIRLINE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	60-75 ①		13TB	Not Req.	26S	S1-1 * & S3-3 *	6TA4-S	N-8TA-S *	

① For Model WG-2697A. Part #60-65 used in Models WG-2687A, WG-2688A.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Switch	2A520	Function Selector (Rotary Wafer Type) WG-2697A
	Switch	2A508	Function Selector, Models WG-2687A, WG-2688A

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	10A960-2	Level, Bass, Treble, Contour, Balance, Function, Models WG-2687A, 88A
Knob	10A959-3	Level, Bass, Treble, Contour, Balance, Function, Model WG-2697A
Leg	81X23-10	Mahogany, Models WG-2687A, WG-2688A
Leg	81X23-11	Oak, Models WG-2687A, WG-2688A

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

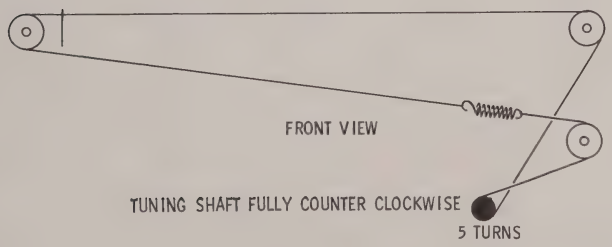
**AUTOMATIC
MODEL FM-61**

AUTOMATIC
MODEL FM-61

AUTOMATIC
MODEL FM-61

TRADE NAME	Automatic Model FM-61
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Battery Operated 6 Tube Universal Type Automobile FM Converter
POWER SUPPLY	12 Volt Storage Battery RATING 1.2 Amp. @ 12.6 Volts DC
TUNING RANGE—FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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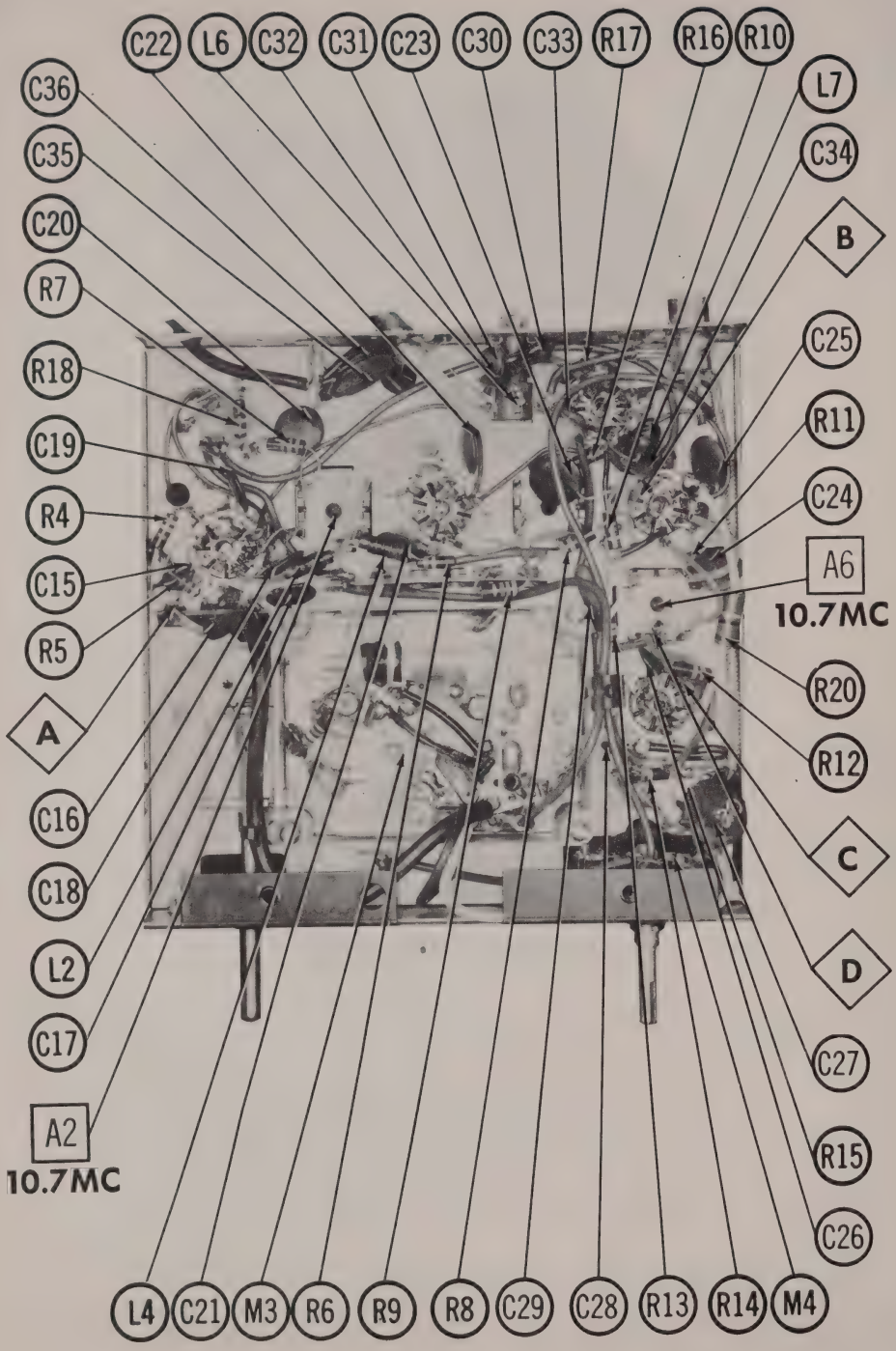
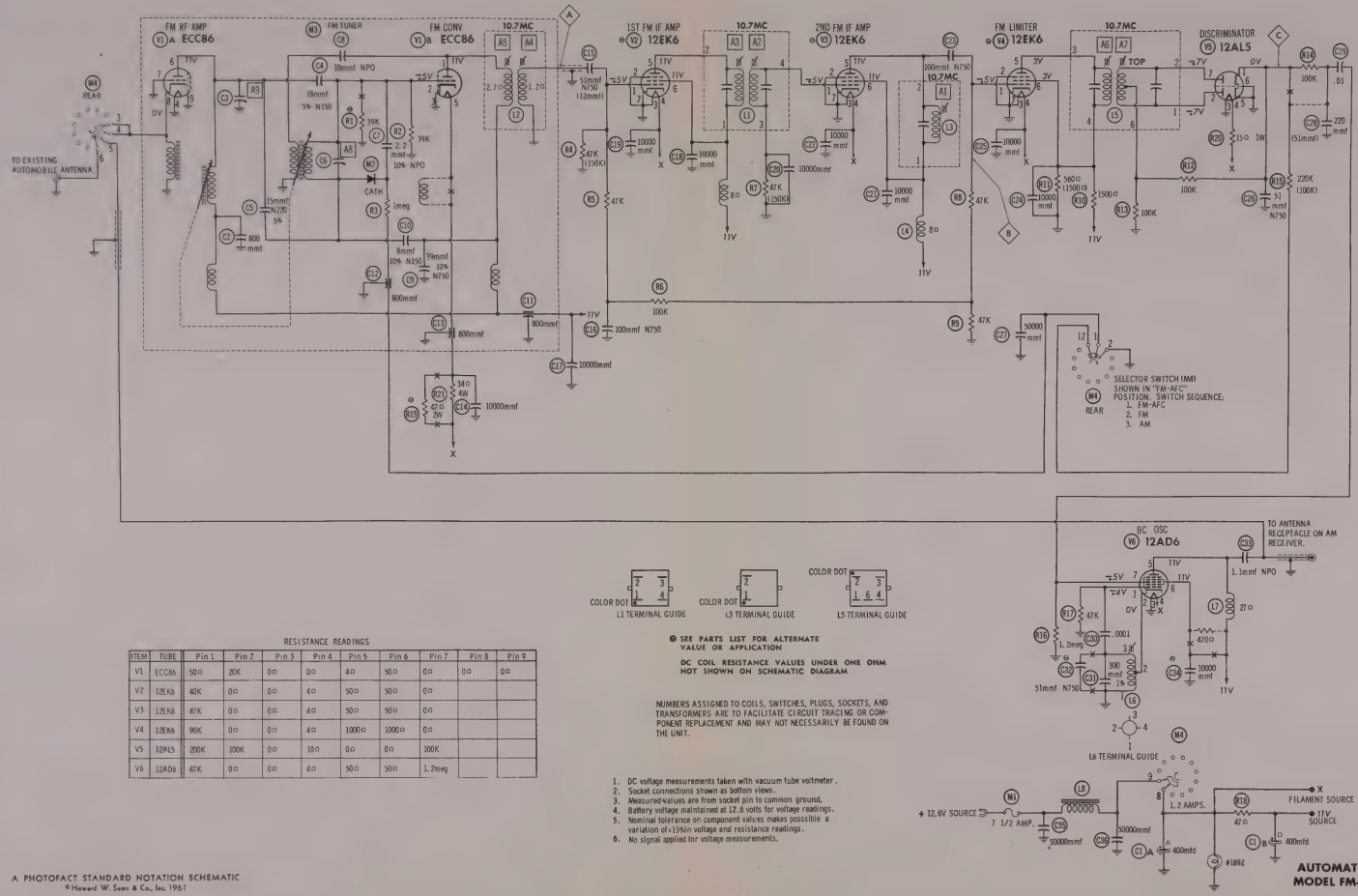
KD284

SET 514 FOLDER 6



CHASSIS BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC86	50Ω	20K	0Ω	0Ω	4Ω	50Ω	0Ω	0Ω	0Ω
V2	12EK6	40K	0Ω	0Ω	4Ω	50Ω	50Ω	0Ω		
V3	12EK6	47K	0Ω	0Ω	4Ω	50Ω	50Ω	0Ω		
V4	12EK6	90K	0Ω	0Ω	4Ω	1000Ω	1000Ω	0Ω		
V5	12AL5	200K	100K	0Ω	10Ω	0Ω	0Ω	100K		
V6	12AD6	47K	0Ω	0Ω	4Ω	50Ω	50Ω	1.2meg		

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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AUTOMATIC MODEL FM-61

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:
A1, A2, A3, A6, A7... GENERAL CEMENT #5097, 8727
WALSCO #2515
A4, A5..... GENERAL CEMENT #9440
A8, A9..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to point Ⓐ. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 470K to point Ⓑ. Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	High side thru 47Ω to antenna receptacle. Low side to chassis.	"	"	"	A4, A5	"
3.	High side thru .01mfd to point A. Low side to chassis.	"	"	DC probe thru 1meg to point Ⓒ. Common to chassis.	A6	"
4.	"	"	"	DC probe to point Ⓓ. Common to chassis.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to point Ⓐ. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓑ. Low side to chassis.	A1, A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	High side thru 47Ω to antenna receptacle. Low side to chassis.	"	"	"	A4, A5	"
3.	High side thru .01mfd to point Ⓐ. Low side to chassis.	"	"	Vert. amp. thru 47K to point Ⓒ. Low side to chassis.		"
4.	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A7	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru 47Ω to antenna receptacle. Low side to chassis.	108MC (Unmod.)	(FM) 108MC	DC probe thru 470K to point Ⓑ. Common to chassis.	A8, A9	Adjust for maximum deflection.

FIG. 1

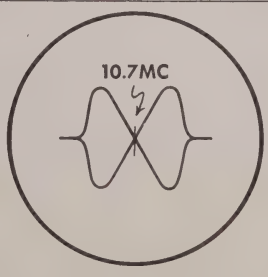
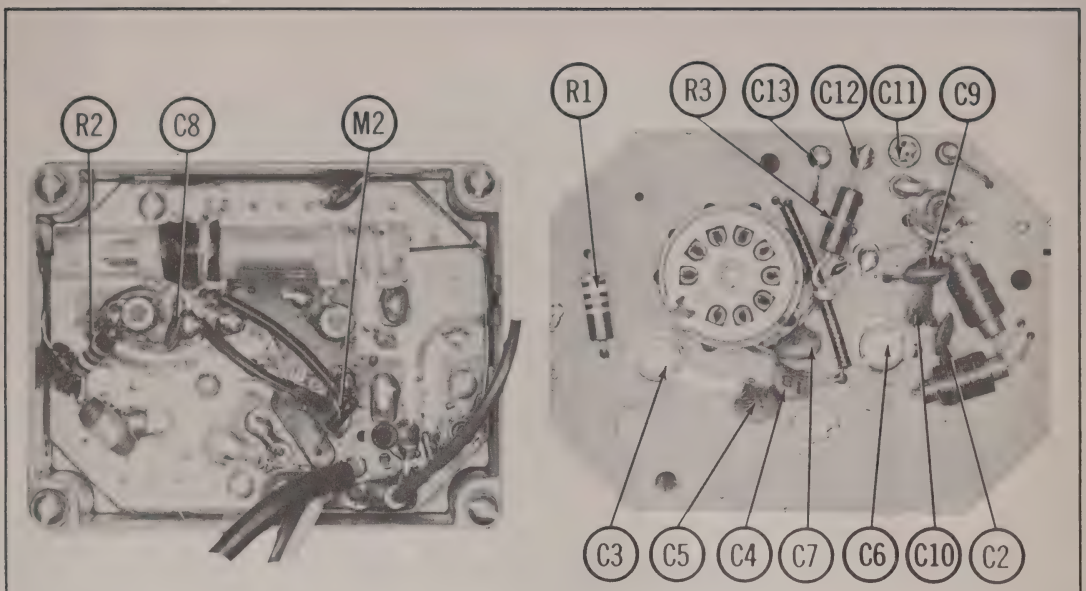
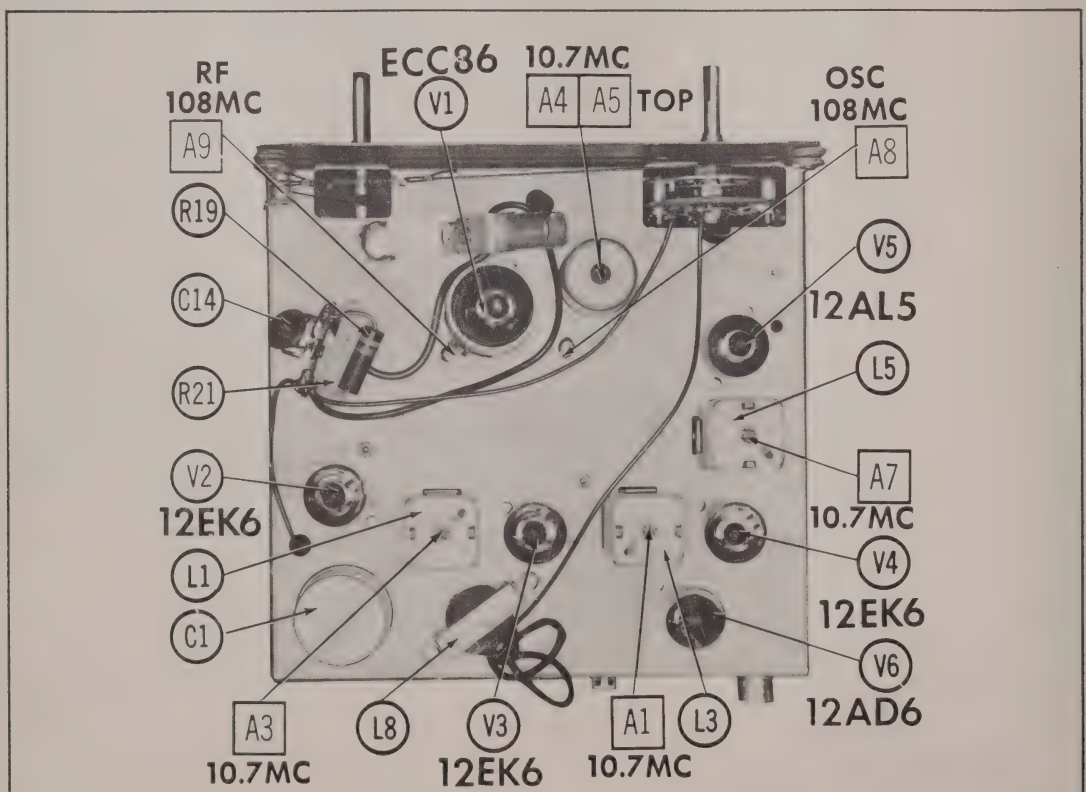


FIG. 2



FM RF SUB CHASSIS



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •	
V1	FM RF Amp. -FM Conv.	ECC86	V4	FM Limiter	12EK6 (12EZ6) *
V2	1st FM IF Amplifier	12EK6 (12EZ6) *	V5	Discriminator	12AL5
V3	2nd FM IF Amplifier	12EK6 (12EZ6) *	V6	BC Oscillator	12AD6

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲400	15	20-320				TD-500-15		
B	■400	15					TD-500-15		

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	800		DI-820	DD-801	L10T8	CCD-801	GP382	10TS-T80
C3								
C4	18 5% N150					*		10TCP-Q18
C5	15 5% N220					*		10TCR-Q15
C6								
C7	2.2 10% NPO		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C8	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C9	39 10% N750		N750-DI 39	TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C10	8 10% N150					*		10TCP-V82
C11	800							
C12	800							
C13	800							
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	51 N750	(12mmf) †		TCN-51	C10Q51U			
C16	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C23	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	51 N750			TCN-51	C10Q51U			
C27	50000		BPD-05	DD-503			GP150	5HK-S50
C28	220	(51mmf) †	DI-22	DD-221	L10T22	CCD-221	GP322	10TS-T22
C29	.01 200V		P288N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C30	.0001 200V		P688N-0001	DD-102	CUB6T1		GEM-3031	6TM-T10
C31	300 1%		1469-0003F			VCM-20-301F		
C32	51 N750	Note 1		TCN-51	C10Q51U			
C33	1.1 NPO			TCZ-1			CNO-510	10TCC-V10
C34	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	50000		BPD-05	DD-503			GP150	5HK-S50
C36	50000		BPD-05	DD-503			GP150	5HK-S50

Note 1. Not used in some versions.
† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	39K	Note 1
R2	39K	
R3	1meg	
R4	47K	(150K) *
R5	47K	
R6	100K	
R7	47K	(150K) *

ITEM No.	RATING	REMARKS
R8	47K	
R9	47K	
R10	1500Ω	
R11	560Ω	(1500Ω) *
R12	100K	
R13	100K	
R14	100K	

ITEM No.	RATING	REMARKS
R15	220K	(100K) *
R16	1.2meg	
R17	47K	
R18	47Ω	
R19	47Ω 2W	Note 1
R20	15Ω 1W	
R21	14Ω 4W	

Note 1. Not used in some versions.
* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA AUTOMATIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	2nd IF Trans.		FM-254	1463	RTC-8599	
L2	RF Choke		TV-194	6112	RTC-8574	100uh
L3	3rd IF Trans.					
L4	RF Choke		TV-194	6112	RTC-8574	100uh
L5	Discriminator		FM-253	1464	RTC-8665	
L6	BC Osc. Coil					
L7	RF Choke		BC-513	4652	RTC-8532	1MH

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ^A)	REPLACEMENT DATA AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L8	1.2A	.6Ω	.009 HY	75A6001					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA AUTOMATIC PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M1	SFE	7½A			30707.5 (SFE 7½A)	155009	SFE 7½	HDH

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA AUTOMATIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2					AFC Diode (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	Tuner Assembly	78B1480	
M4	Switch	94A1481	FM-FM-AFC (Rotary Wafer Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Pointer	84A633	Tuning
Pointer	84A1512	AM, FM, AFC
Knob	48A1013	Tuning, Function

PHOTOFACT® Folder

**BOGEN
MODEL SRB20**

BOGEN
MODEL SRB20

BOGEN
MODEL SRB20

TRADE NAME	Bogen Model SRB20		
MANUFACTURER	Bogen-Presto Co., A Div. of the Siegler Corp., P. O. Box 500, Paramus, N. J.		
TYPE SET	AC Operated 16 Tube FM-AM Receiver With Stereo Amplifier		
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles	RATING	130 Watts, 1.2 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	520 — 1640KC	FREQ. MOD.	88 — 108MC

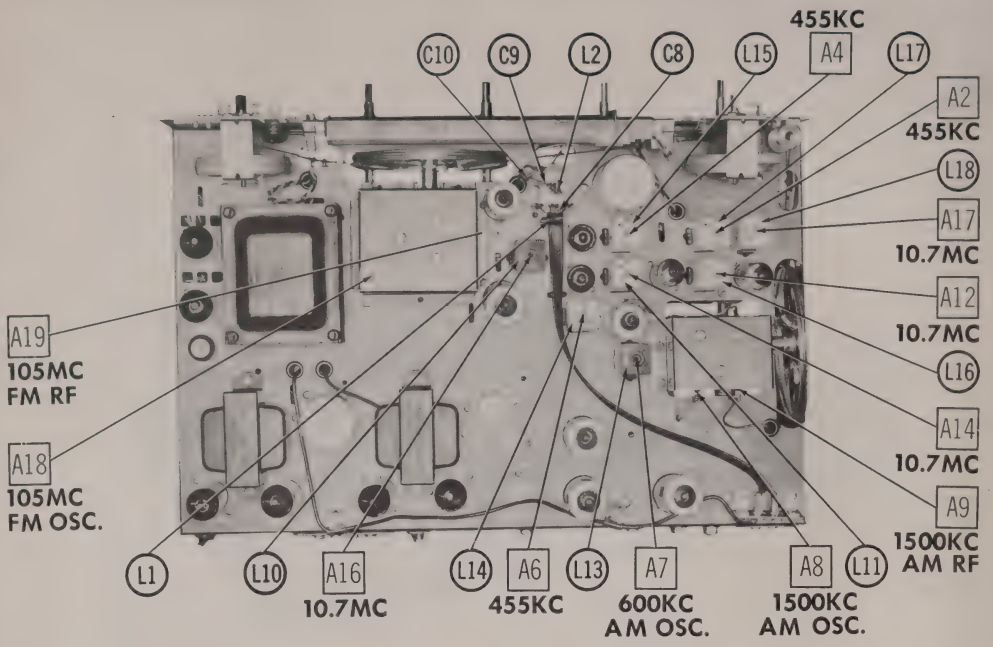
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

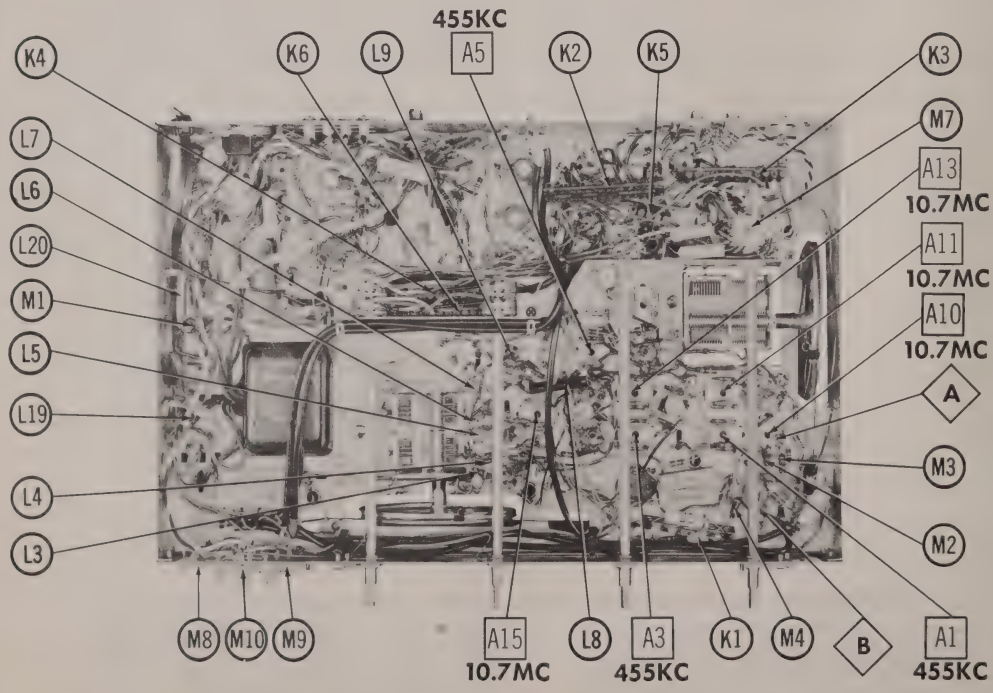
KK339

DATE 1-61 SET 514 FOLDER 7

SET 514 FOLDER 7



CHASSIS - TOP VIEW



CHASSIS BOTTOM VIEW - ALIGNMENT, INDUCTOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A6 and A10 thru A17	GENERAL CEMENT #5097, 8727 WALSCO #2515
A7	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A8, A9, A19	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A18	GENERAL CEMENT #8721, 8722 WALSCO #2519

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	"	600KC	600KC	"	A7	"
3.	"	1500KC	1500KC	"	A8, A9	Adjust for maximum output. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 100K to point (A). Common to chassis.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
5.	"	"	"	DC probe to point (B). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 47K to point (A). Low side to chassis.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A17	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

FM AFC "Off".

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals with 120Ω in each lead.	105MC (Unmod.)	(FM) 105MC	DC probe thru 100K to point (A). Common to chassis.	A18, A19	Adjust for maximum deflection.
7.	"	90MC	90MC	"		Check Tracking.

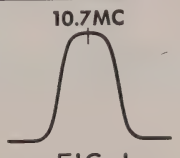


FIG. 1

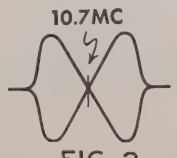


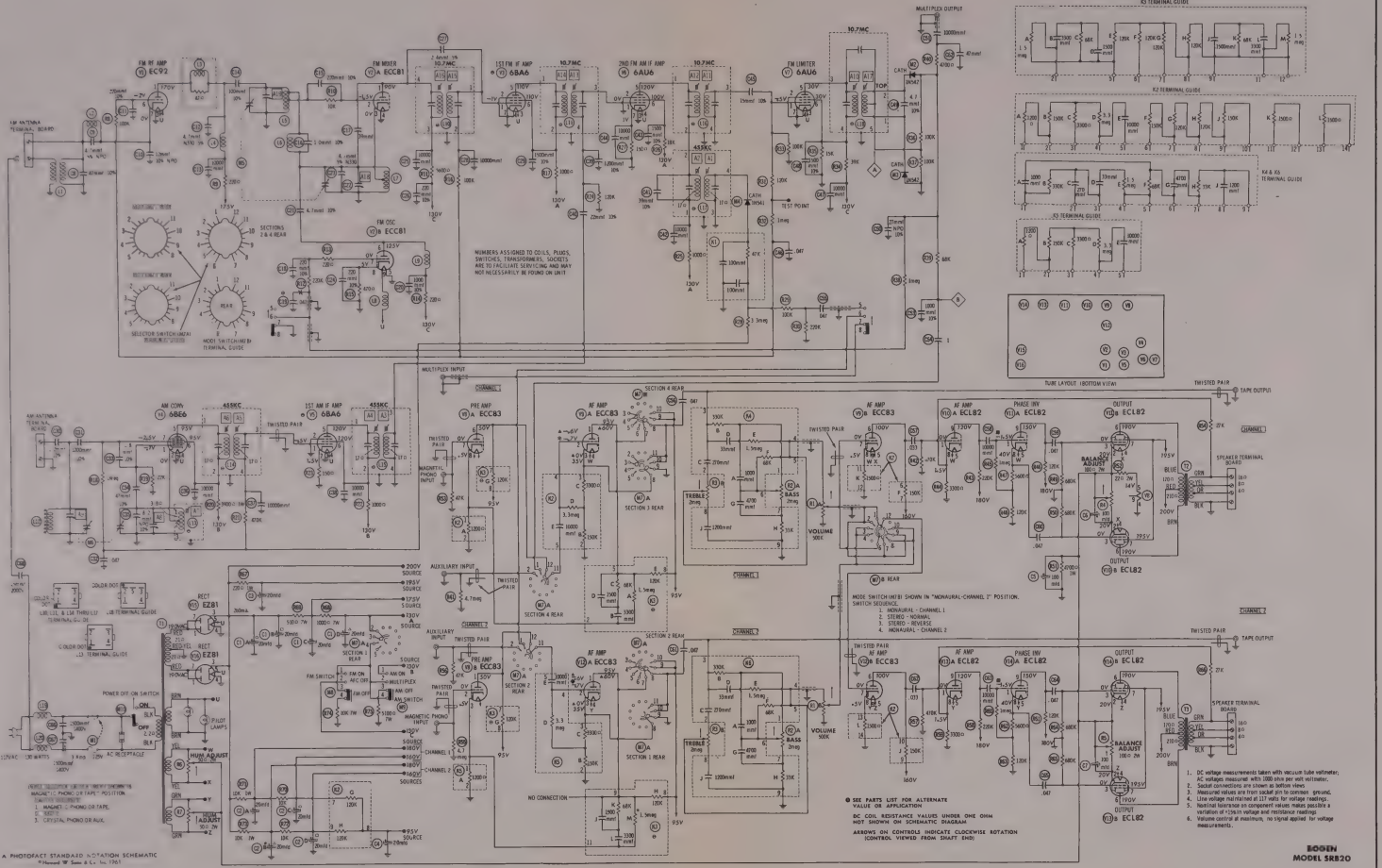
FIG. 2

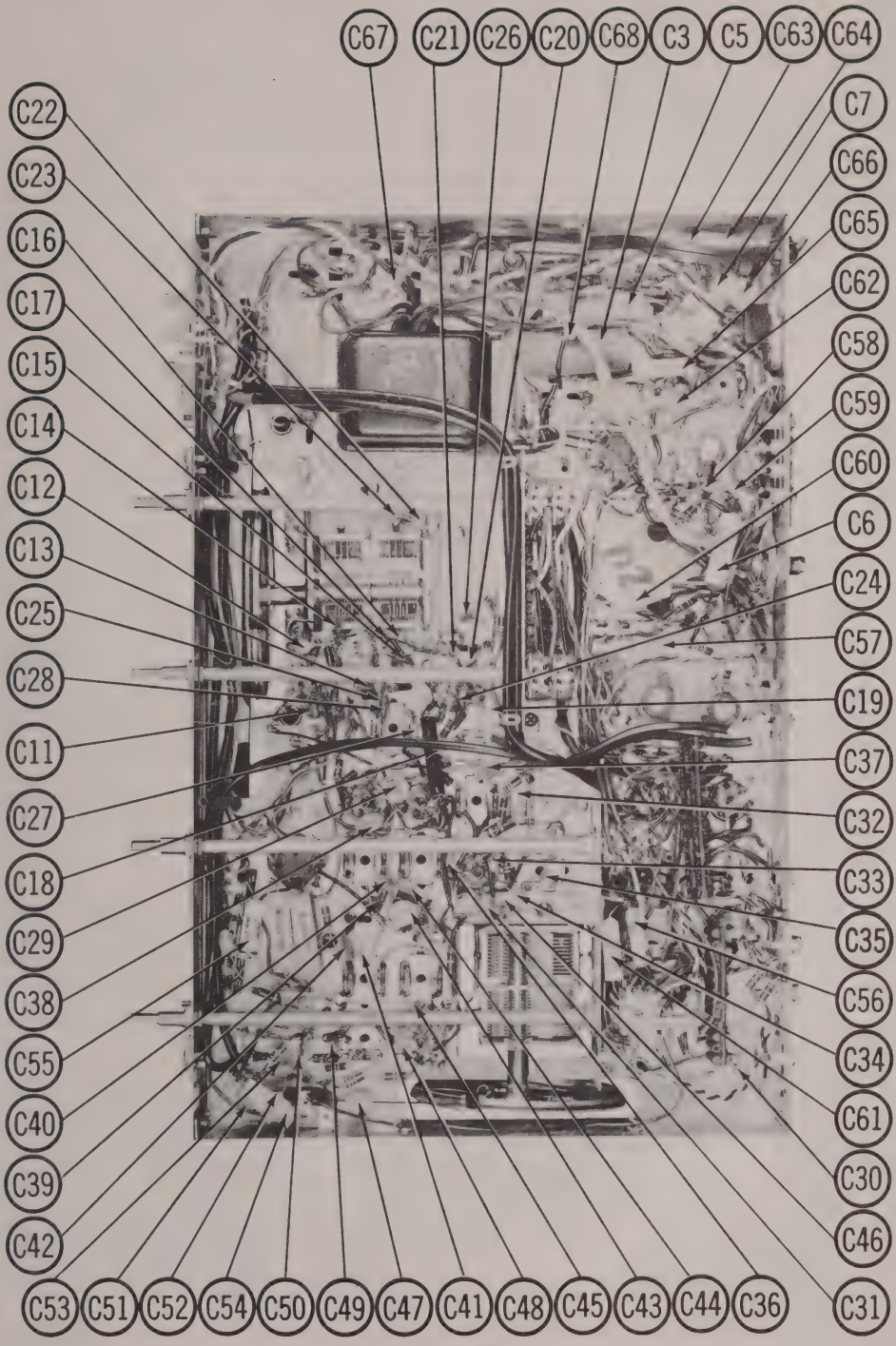
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EC92 6AB4	†730Ω	0Ω	0Ω	.1Ω	0Ω	1.3meg	0Ω		
V2	ECC81 12AT7	†7100Ω	10K	0Ω	0Ω	0Ω	†1700Ω	1.4meg ‡ 220K	470Ω	.1Ω
V3	6BA6	1.3meg	0Ω	.1Ω	0Ω	†2500Ω	†2500Ω	0Ω		
V4	6BE6	22K	0Ω	0Ω	.1Ω	†5400Ω	†5400Ω	4.5meg		
V5	6BA6	4meg	0Ω	0Ω	.1Ω	†2500Ω	†2500Ω	150Ω		
V6	6AU6	120K	0Ω	.1Ω	0Ω	†2500Ω	†19K	150Ω		
V7	6AU6	100K	0Ω	.1Ω	0Ω	†35K	†35K	0Ω		
V8	ECC83 12AX7	†200K	47K	1200Ω	0Ω	25Ω	†200K	47K	1200Ω	NC
V9	ECC83 12AX7	†200K	3.4meg	153K ▲0Ω	60Ω	60Ω	†160K	0Ω	1500Ω	60Ω
V10	ECL82 6BM8	470K	70Ω	680K	60Ω	60Ω	†210Ω	†220Ω	3300Ω	†230K
V11	ECL82 6BM8	1.1meg	40Ω	680K	60Ω	60Ω	†170Ω	†220Ω	125K	†130K
V12	ECC83 12AX7	†200K	3.4meg	153K ▲0Ω	60Ω	60Ω	†160K	0Ω	1500Ω	60Ω
V13	ECL82 6BM8	470K	70Ω	680K	60Ω	60Ω	†210Ω	†220Ω	3300Ω	†230K
V14	ECL82 6BM8	1.1meg	40Ω	680K	60Ω	60Ω	†170Ω	†220Ω	125K	†130K
V15	EZ81 6CA4	21Ω	NC	¶	0Ω	.1Ω	NC	21Ω	NC	NC
V16	EZ81 6CA4	21Ω	NC	¶	0Ω	.1Ω	NC	21Ω	NC	NC

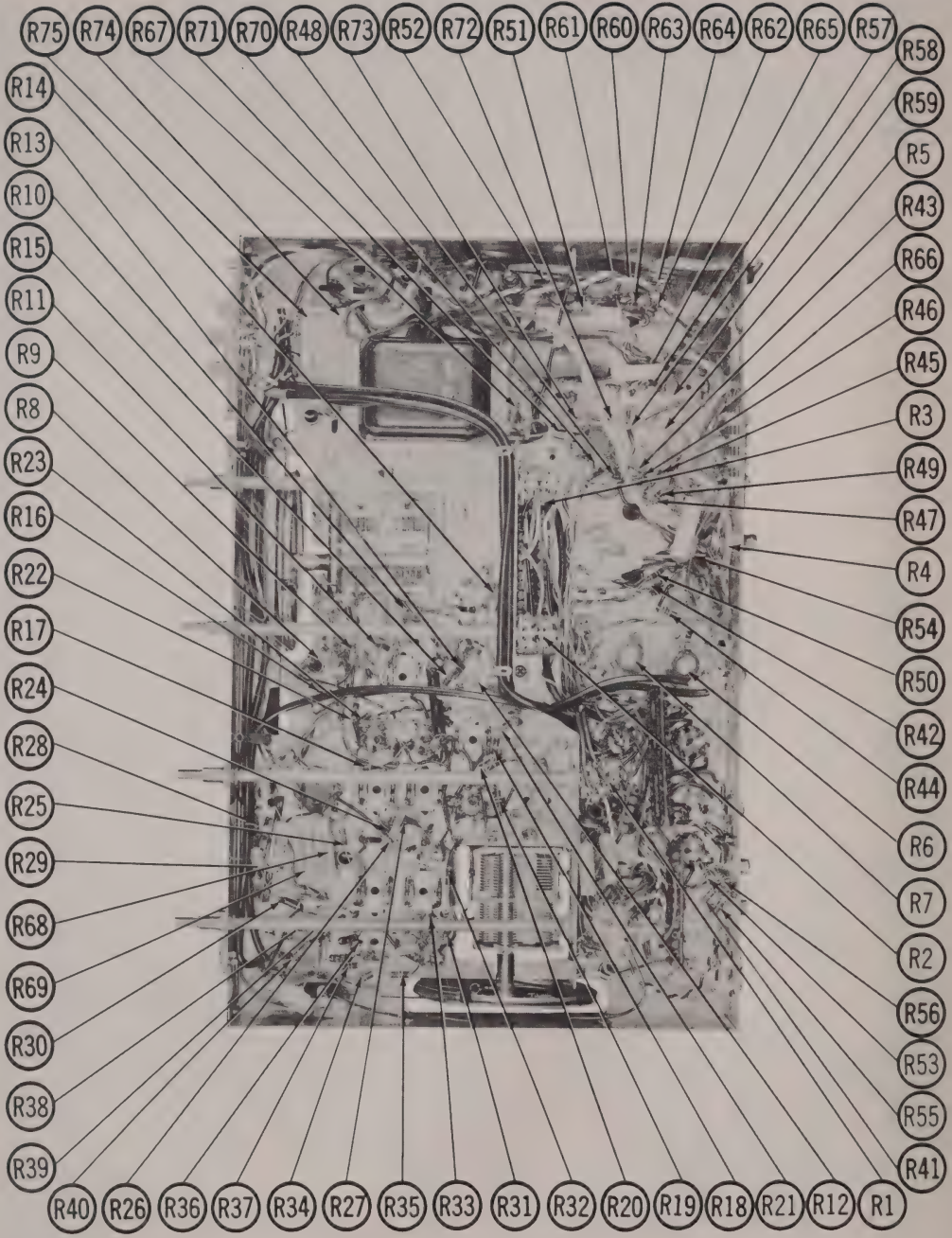
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS MADE IN "STEREO-RADIO" POSITION UNLESS OTHERWISE DESIGNATED.

† MEASURED FROM PIN 3 OF V15 OR V16.
■ MEASURED FROM PIN 8 OF V11.
◓ MEASURED FROM PIN 8 OF V14.
* MEASURED FROM PIN 3 OF V9.
◆ MEASURED FROM PIN 3 OF V12.
‡ MEASURED WITH "AFC" OFF.
▲ MEASURED IN "MAG-PHONO" POSITION.
NC NO CONNECTION


FM RF AMP V6 EC92
FM MIXER V7A ECC81
FM OSC V7B ECC81
1ST FM IF AMP V8 6BA6
2ND FM AM IF AMP V9 6AU6
FM LIMITER V10 6AU6
10.7MC
455KC
MULTIPLEX OUTPUT
K3 TERMINAL GUIDE
K2 TERMINAL GUIDE
K4 & K5 TERMINAL GUIDE
K5 TERMINAL GUIDE
TUBE LAYOUT (BOTTOM VIEW)
NUMBERS ASSIGNED TO COILS, PLUGS, SWITCHES, TRANSFORMERS, SOCKETS ARE TO FACILITATE SERVICING AND MAY NOT NECESSARILY BE FOUND ON UNIT
SELECTOR SWITCH (REAR VIEW)
MODE SWITCH (REAR) TERMINAL GUIDE
AM CONV V4 6BE6
1ST AM IF AMP V5 6BA6
AM ANTENNA TERMINAL BOARD
MULTIPLEX INPUT
PRE AMP V1A ECC83
AF AMP V1A ECC83
AF AMP V2A ECL82
PHASE INV V2A ECL82
OUTPUT V3A ECL82
OUTPUT V3B ECL82
TREBLE
BASS
VOLUME
BALANCE ADJUST
TWISTED PAIR
TAPE OUTPUT
SPEAKER TERMINAL BOARD
AUXILIARY INPUT
MAGNETIC PHONO INPUT
FM SWITCH
AM SWITCH
MULTIPLEX
POWER OFF-ON SWITCH
PILOT LAMPS
AC RECEPTACLE
HUM ADJUST
RECT V11 EZ81
RECT V12 EZ81
LUG TERMINAL GUIDE
COLOR DOT TERMINAL GUIDE
MODE SWITCH (KEY) SHOWN IN "MONAURAL-CHANNEL 2" POSITION.
SWITCH SEQUENCE:
1. MONAURAL - CHANNEL 1
2. STEREO - NORMAL
3. STEREO - REVERSE
4. MONAURAL - CHANNEL 2
NO CONNECTION
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
BOOTH
MODEL SRB20

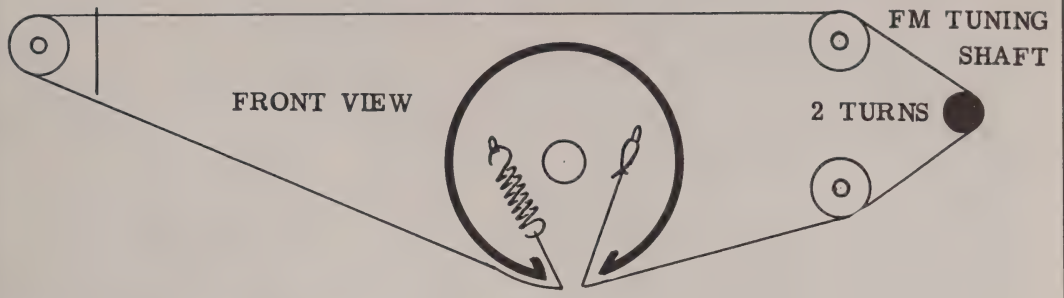


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

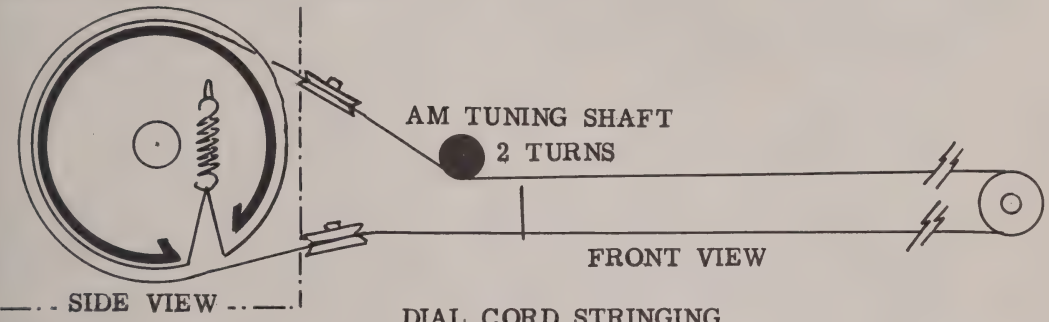


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

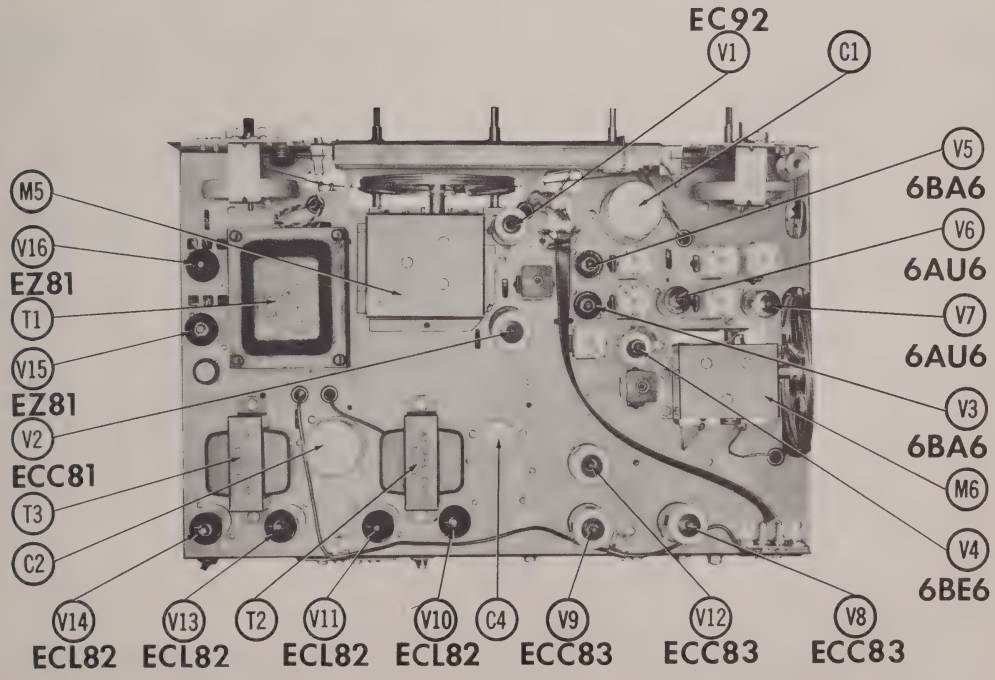
FM TUNING GANG CLOSED



AM TUNING GANG CLOSED



DIAL CORD STRINGING



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	EC92/6AB4
V2	FM Mixer-FM Osc.	ECC81/12AT7
V3	1st FM IF Amplifier	6BA6 (EF93) *
V4	AM Converter	6BE6
V5	1st AM IF Amplifier	6BA6 (EF93) *
V6	2nd FM-AM IF Amplifier	6AU6
V7	FM Limiter	6AU6
V8	Channel 1 Preamp. - Channel 2 Preamp.	ECC83/12AX7
V9	Channel 1 AF Amp.	ECC83/12AX7
V10	Channel 1 AF Amp. - Channel 1 Output	ECL82/6BM8
V11	Channel 1 Phase Inv. - Channel 1 Output	ECL82/6BM8
V12	Channel 2 AF Amp.	ECC83/12AX7
V13	Channel 2 AF Amp. - Channel 2 Output	ECL82/6BM8
V14	Channel 2 Phase Inv. Channel 2 Output	ECL82/6BM8
V15	Rectifier	EZ81/6CA4
V16	Rectifier	EZ81/6CA4

* Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	250	79-010-023		C0270	FP320	TMT-3724	TVL-3780	
B	■20	250			BR2025	TC55	TD-20-250	TVA-1508	
C	20	250							
D	▲20	250							
C2A	20	250	79-010-023		C0270	FP320	TMT-3724	TVL-3780	
B	▲20	250			BR2025	TC55	TD-20-250	TVA-1508	
C	▲20	250							
D	■20	250							
C3	20	250	79-001-098	PRS1570	BR2025	TC55	TD-20-250	TVA-1508	
C4	20	250	79-010-026	AFH1-27	A0270	FP125			
C5	100	25	79-001-049	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C6	100	6	79-003-014	PTT6100	NLW100-6	TT6X100	ML100-6	TE-1102	
C7	100	6	79-003-014	PTT6100	NLW100-6	TT6X100	ML100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C9	4.7 NPO 5%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C10	12 NPO 10%		NPO-DI 12	TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C11	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C12	4.7 N330 5%					*		
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C14	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C15	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C16	1.0 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C17	39		DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C18	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C19	.047 200V	Note 1	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C20	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C21	4.7 10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C22								
C23	4.7 N330 5%					*		
C24	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C26	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C27	2.4 5%							
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C29	1500 10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C30	1.2 10%							10TCC-V12
C31	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C32	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C33	1.8 10%							10TCC-V18
C34	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C35	8.2 NPO 10%		NPO-DI 8.2		C10V82C			10TCC-V82
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	1200 10%		DI-1200	DD-122		CCD-122	GP212	10TS-D12
C40	22 10%		DI-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C41	39 10%		DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C43	1500 10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C45	15 10%		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C46	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C47	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C48	1500 10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C49	4.7 10%		NPO-DI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C50	27 NPO 10%			TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C52	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C53	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C54	.1 200V		P288N-1	DF-104	CUB2P1		2DP-3-104	GEM-201 2TM-P10
C55	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C56	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C57	.033 200V		P288N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C58	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C59	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C60	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C61	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C62	.033 200V		P288N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C63	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C64	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C65	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C66	1500 1400V		HVD-15-1500	DD30-152	HVC16D15		2HV-215	30GA-D15
C67	1500 1400V		HVD-15-1500	DD30-152	HVC16D15		2HV-215	30GA-D15
C68	15 2000V		HVD-30-15	DD30-150	HVA20Q15	3CCD-150	2DY-415	20GA-Q15

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	77-001-474					Volume, Channel 2
B	500K	½						Volume, Channel 1
R2A	2meg	½	77-001-475					Bass, Channel 2
B	2meg	½						Bass, Channel 1
R3A	2meg	½	77-001-475					Treble, Channel 2
B	2meg	½						Treble, Channel 1
R4A	100Ω	2(WW)	77-001-479	WN-101	A43-100	W11-084	R100L	Balance Adj., Channel 1
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R5A	100Ω	2(WW)	77-001-479	WN-101	A43-100	W11-084	R100L	Balance Adj., Channel 2
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R6A	50Ω	2(WW)	77-001-113	WN-500	A43-50	WPK50	R50L	Hum Adj., Channel 1
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R7A	50Ω	2(WW)	77-001-113	WN-500	A43-50	WPK50	R50L	Hum Adj., Channel 2
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	100K	
R9	220Ω	
R10	10K	
R11	5600Ω	
R12	220K	
R13	220Ω	
R14	220Ω	
R15	470Ω	
R16	100K	
R17	1000Ω	
R18	1meg	
R19	22K	
R20	3900Ω 1W	
R21	470K	
R22	1000Ω	
R23	150Ω	
R24	120K	
R25	1000Ω	
R26	18K	
R27	150Ω	
R28	3.3meg	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT) (cont)

ITEM No.	RATING	REMARKS
R29	100K	
R30	220K	
R31	120K	
R32	1meg	
R33	100K	
R34	39K	
R35	15K	
R36	100K	
R37	100K	
R38	1meg	
R39	68K	
R40	4700Ω	
R41	4.7meg	
R42	470K	
R43	220K	
R44	3300Ω	

ITEM No.	RATING	REMARKS
R45	1meg	
R46	120K	
R47	5600Ω	
R48	120K	
R49	680K	
R50	680K	
R51	4700Ω 1W	
R52	22Ω 2W	
R53	47K	
R54	27K	
R55	4.7meg	
R56	47K	
R57	470K	
R58	220K	
R59	3300Ω	
R60	1meg	

ITEM No.	RATING	REMARKS
R61	120K	
R62	5600Ω	
R63	120K	
R64	680K	
R65	680K	
R66	27K	
R67	2200Ω 1W	
R68	1000Ω 7W	IRC#PW10-1000Ω
R69	510Ω 7W	IRC#PW10-510Ω
R70	10K	
R71	10K 1W	
R72	10K	
R73	10K 1W	
R74	10K 7W	IRC#PW10-10000Ω
R75	5100Ω 7W	IRC#PW10-5100Ω

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BOGEN PART No.	REPLACEMENT DATA
K1	Diode RF Filter	100mmf, 100mmf, 47K	78-907-001	Aerovox PA-97 Centralab PC-50 Cornell-Dubilier 1IITM1 Sprague D-1
K2	Tone Compensation	10000mmf, 1200Ω, 1500Ω, 1500Ω, 3300Ω, 120K, 120K, 150K, 150K, 150K, 3.3meg	78-909-001	
K3	Tone Compensation	1500mmf, 1500mmf, 3300mmf, 3300mmf, 68K, 68K, 120K, 120K, 120K, 120K, 1.5meg, 1.5meg	78-916-001 ①	
K4	Tone Compensation	33mmf, 270mmf, 1000mmf, 1200mmf, 4700mmf, 33K, 68K, 330K, 1.5meg	78-910-001	
K5	Tone Compensation	10000mmf, 1200Ω, 3300Ω, 150K, 3.3meg	78-911-001	
K6	Tone Compensation	33mmf, 270mmf, 1000mmf, 1200mmf, 4700mmf, 33K, 68K, 330K, 1.5meg	78-910-001	

① Some versions may use Part #78-912-001 in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: BOGEN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	FM Ant. Trans.	95-5017-01				① Wound on 47Ω Resistor
L2	RF Choke (1uh)	95-5016-01	BC-561	4602	RTC-8515	② IRC Part #CLA
L3	RF Choke	95-5001-01①				③ Alternate Part #H458
L4	RF Choke (1.5uh)	95-5005-02	BC-562	4604	RTC-8516	④ Alternate Part #H355
L5	FM RF	95-5003-01				⑤ Alternate Part #H454
L6	RF Choke (1.5uh)	95-5005-02	BC-562	4604	RTC-8516	⑥ Alternate Part #H297
L7	FM Osc.					⑦ Alternate Part #H295
L8	Fil. Choke (1.9uh)	U512	BC-563	4606	RTC-8517	
L9	RF Choke (1uh)	95-5019-01②	BC-561	4602	RTC-8515	
L10	1st FM IF Trans.	95-5021-01③	FM-254	1463	RTC-8599	
L11	2nd FM IF Trans.	95-5010-01④	FM-254	1463	RTC-8599	
L12	Loopstick	H694	BC-419	705-A		
L13	AM Osc.	95-5009-01⑤	BC-392	A-121-C	RTC-8760	
L14	1st AM IF Trans.	95-5013-01⑥	BC-352	12-C1	RTC-8632	
L15	2nd AM IF Trans.	95-5013-01⑥	BC-353	12-C2	RTC-8633	
L16	3rd FM IF Trans.	95-5010-01④	FM-254	1463	RTC-8599	
L17	3rd AM IF Trans.	95-5013-01⑥	BC-353	12-C2	RTC-8633	
L18	Discriminator	95-5020-01⑦	FM-253	1464	RTC-8665	
L19	Line Choke (1.9uh)	U512	BC-563	4606	RTC-8517	
L20	Line Choke (1.9uh)	U512	BC-563	4606	RTC-8517	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: BOGEN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ① 1.2A	380VCT @ .260V DC	6.3V @ 4.2A	83-611-000					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 1.8A	6.3V @ 1.8A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: BOGEN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4900Ω CT	16Ω Tap @ 8Ω, 4Ω	83-298-000					
T3	4900Ω CT	16Ω Tap @ 8Ω, 4Ω	83-298-000					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: BOGEN PART No. FUSE	BOGEN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 125V S/B			313003 (3AG 3A 125V S/B)	342001	GJV 3	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: BOGEN PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2	1N542	1N542	1N295	1N295	FM Det. (Pigtail)
M3	1N542	1N542	1N295	1N295	FM Det. (Pigtail)
M4	1N541	1N541	1N60	1N60	AM Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	BOGEN PART No.	NOTES
M5	Tuning Cap.		FM, 2 Gang
M6	Tuning Cap.		AM, 2 Gang (Ant. 36-579mmf, Osc. 21-172mmf)
M7A	Switch	81-001-514	Input Selector (Rotary Wafer Type)
B	Switch		Mode (Rotary Wafer Type)
M8	Switch	81-003-001	FM (DP 3 Position Slide Type)
M9	Switch	81-003-001	AM (DP 3 Position Slide Type)
M10	Switch	81-003-004	Power Off-On (SPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

DECCA MODELS
DP-306, DP-307, DP-308

DECCA MODELS
DP-306, DP-307, DP-308

DECCA MODELS
DP-306, DP-307, DP-308

TRADE NAME	Decca Models DP-306, DP-307, DP-308
MANUFACTURER	Decca Distributing Corp., 445 Park Ave., New York 22, N. Y.
TYPE SET	AC Operated 3 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 27 Watts, .26 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

FOR REVISED VERSIONS — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT278

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7
V2	Channel 1 Output	50C5
V3	Channel 2 Output	50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA DECCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	EC-121	PR4-200	BBRQ44315C	WQ230	CDB-Q-1001	TVA-3448	
B	30	150						TVA-1410	
C	20	150							
D	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470 10%		DI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	250	(270) †	DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C5	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	470 10%		DI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	250	(270) †	DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C11	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25.
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C15	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50

† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DECCA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg		VC-212	B-85			FA36A	Loudness, Channel 2
B	3meg			SR-85			RU36A	Loudness, Channel 1
C	Shaft			Not Req.			CS3500	
R2A	1meg		VC-118	B-70	A47-1meg-Z	Q13-137	U53	Balance, Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1meg		VC-45	B-69	A47-1meg-S	Q11-137	U54	Balance Note 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	3meg		VC-197	B-84			FA36L	Bass, Channel 2
B	3meg			SR-84			RU36L	Bass, Channel 1
C	Shaft			Not Req.			CS3500	
R4A	500K		VC-198	B-59	AD47-500K-S		FA55L	Treble, Channel 2
B	500K			SR-59	Not Req.		RU55L	Treble, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	

Note 1. Used in early productions.

Note 2. Used in late productions.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

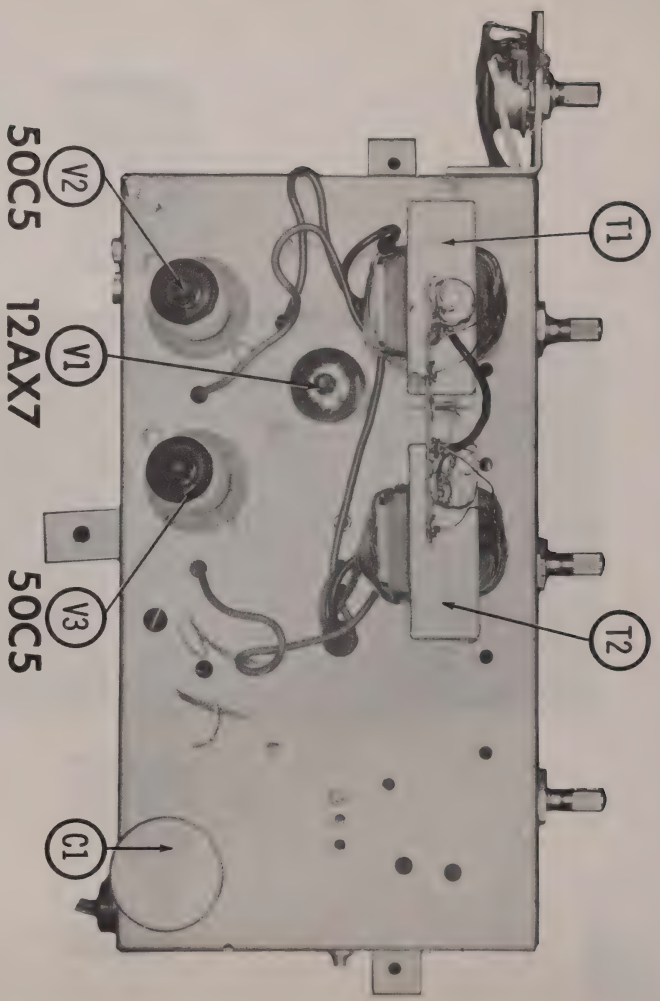
ITEM No.	RATING	REMARKS
R5	100K	
R6	47K	(470K) *
R7	6.8meg	
R8	270K	(470K) *
R9	270Ω	
R10	4700Ω	
R11	47K	

ITEM No.	RATING	REMARKS
R12	180Ω	
R13	100K	
R14	47K	(470K) *
R15	6.8meg	
R16	270K	(470K) *
R17	270Ω	
R18	4700Ω	

ITEM No.	RATING	REMARKS
R19	47K	
R20	2200Ω	
R21	210Ω 5W	IRC#PW5-210Ω
R22	47Ω 2W	
R23	47Ω 2W	

* Alternate Value.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		DECCA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Crossover Choke					8MH
L2	Crossover Choke					8MH

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	DECCA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2900Ω	3-4Ω	AT-46					
		SEC. 2						
		30Ω						
	PRI.	SEC. 1						
T2	2900Ω	3-4Ω	AT-46					
		SEC. 2						
		30Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DECCA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SPK-38	4A1	* Used in early versions.
SP2	8"	PM	6-8Ω	SPK-90*	8A2IZ8	‡ Used in late versions.
SP3	8"	PM	6-8Ω	SPK-90*	8A2IZ8	
SP4	4"	PM	3-4Ω	SPK-38	4A1	
	10"	PM		SPK-61 ‡		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DECCA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.055A	SR-4 *		1N1763 ♦	65A *	SR200 ♦	* Selenium Type ♦ Silicon Type

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	DECCA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	PU-49		86-TS-TB	Not Req.	96T	Not Req.	12TH-S	Not Req.	

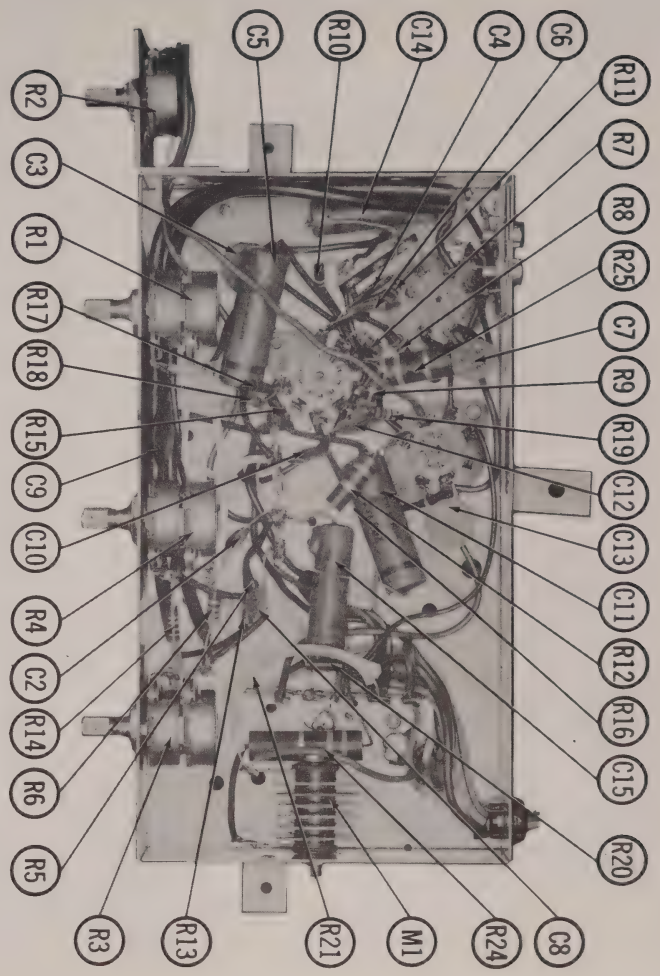
MISCELLANEOUS

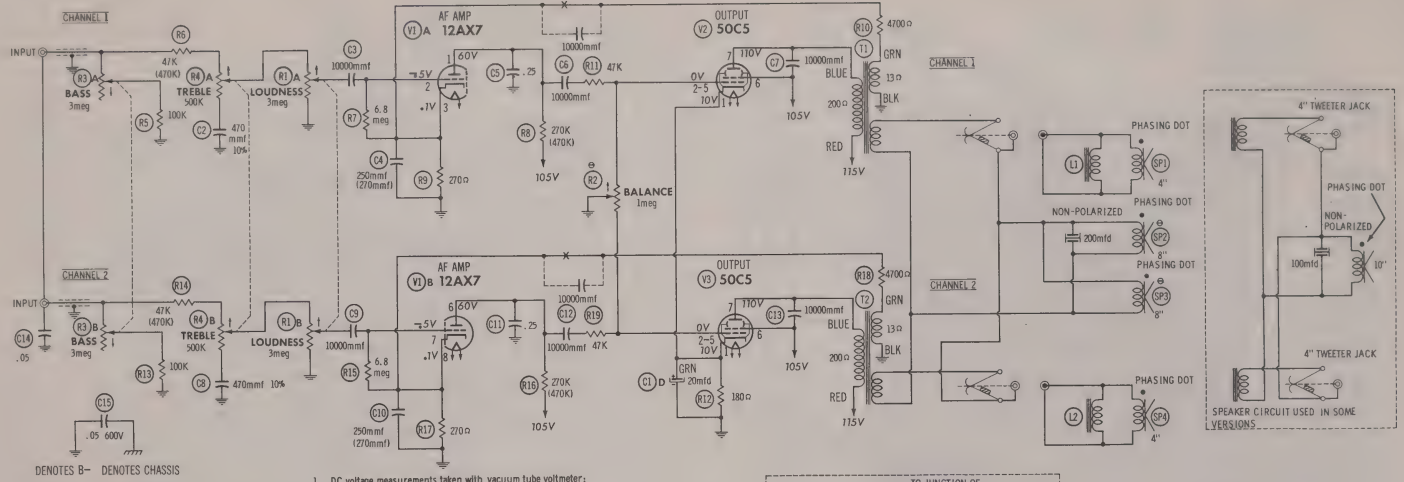
ITEM No.	PART NAME	DECCA PART No.	NOTES
M3	Switch		Off-On (Part of Changer)
M4	Motor		Phono-Drive (Part of Changer)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW



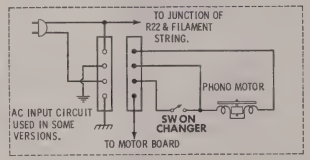


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of components values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†272K	6.8meg	270Ω	15Ω	0Ω	†272K	6.8meg	270Ω	NC
V2	50C5	180Ω	600K	105Ω	62Ω	NC	†2400Ω	†410Ω		
V3	50C5	180Ω	600K	105Ω	150Ω	NC	†2400Ω	†410Ω		

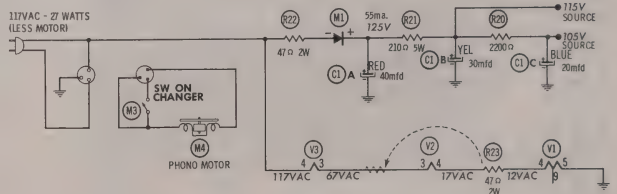
† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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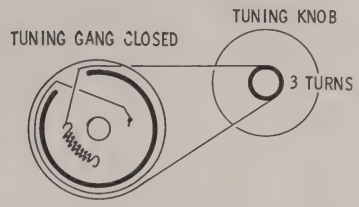
DECCA MODELS DP-306, DP-307, DP-308

PHOTOFACT® Folder with CIRCUITRACE®

MOTOROLA MODELS X16B, X16G, X16N (Ch. HS-797)

MOTOROLA MODELS X16B, X16G, X16N (Ch. HS-797)

TUNING DRIVE CORD STRINGING



FRONT VIEW

TRADE NAME	Motorola Models X16B, X16G, X16N (CH. HS-797)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC RATING 8MA@6 Volts DC (No Signal, Min. Volume) 15 MA@6 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535 — 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A2, A3, A4...GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	600KC	600KC	"	A4	"
3.	"	1620KC	Tuning gang fully open.	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2 thru 4.

DISASSEMBLY

1. Move handle to carrying position.
2. Loosen screw on cabinet back. (Screw is captive). Remove rear cover.
3. Remove screw holding cabinet back. Remove back.
4. Remove handle and volume control knob.
5. Remove 3 chassis mounting screws. (Mounting bracket will also be removed).
6. Lift right side of chassis to allow tuning knob to clear and remove chassis.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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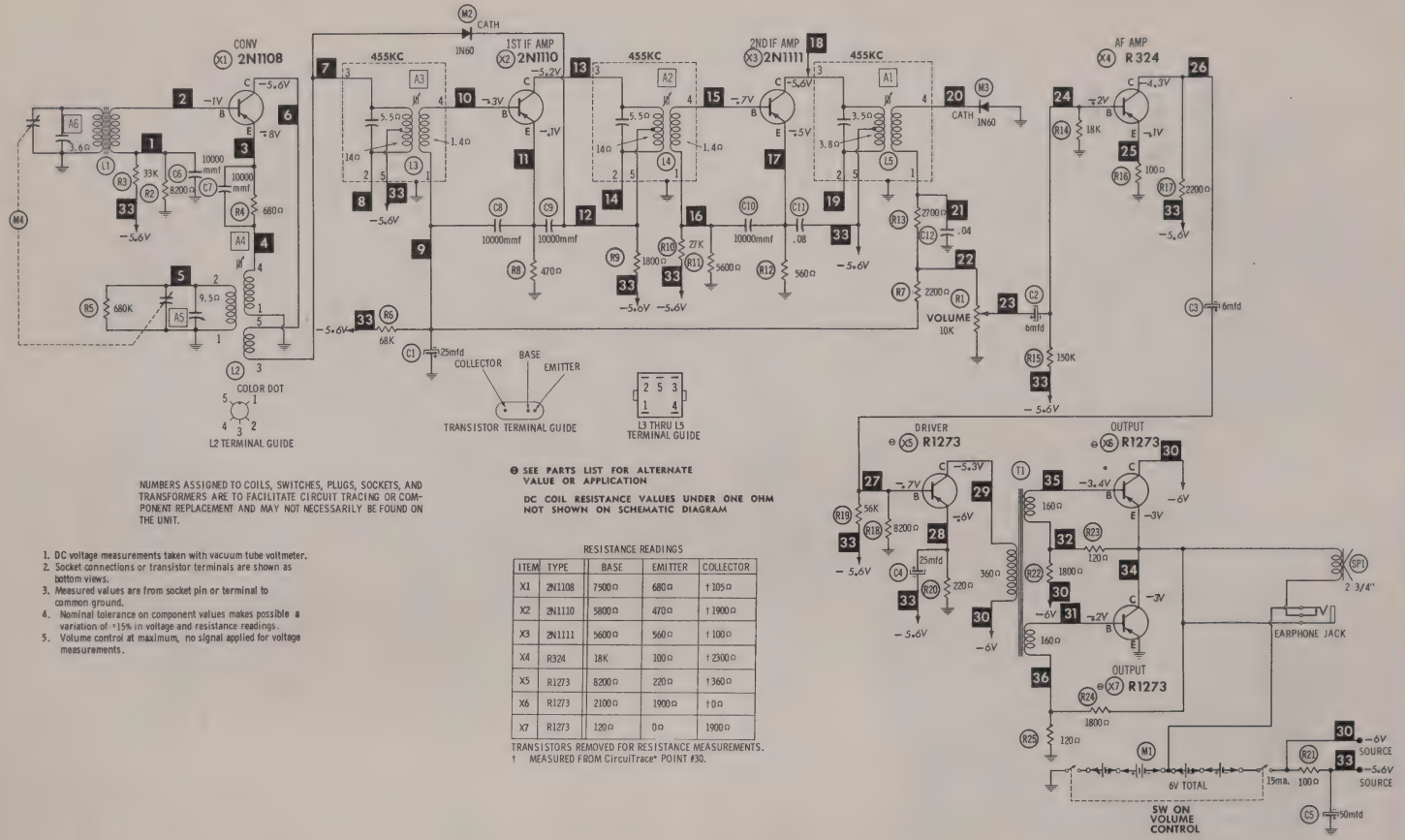
KF299

SET 514 FOLDER 9



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N1108	7500Ω	680Ω	†105Ω
X2	2N1110	5800Ω	470Ω	†1900Ω
X3	2N1111	5600Ω	560Ω	†100Ω
X4	R324	18K	100Ω	†2300Ω
X5	R1273	8200Ω	220Ω	†360Ω
X6	R1273	2100Ω	1900Ω	†0Ω
X7	R1273	120Ω	0Ω	1900Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM CircuiTrace® POINT #30.

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with CIRCUITRACE®

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MOTOROLA MODELS X16B, X16G, X16N (Ch. HS-797)

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1108	Converter		2N486	2N412	PNP
X2	2N1110	1st IF Amplifier		2N483	2N409	PNP
X3	2N1111	2nd IF Amplifier		2N483	2N409	PNP
X4	R324	AF Amplifier				PNP
X5	R1273 *	Driver	2N408			PNP
X6	R1273 *	Output	2N408			PNP
X7	R1273 *	Output	2N408			PNP

* Alternate Type 2N1273.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	25	10	23K646499	PTT-10025	NLW25-10	TT10X25	ML25-12	TE-1118	
C2	6	10	23K646500	XPP-10006	NLW6-25	TT10X6	ML6-12	TE-1127.1	
C3	6	10	23K646500	XPP-10006	NLW6-25	TT10X6	ML6-12	TE-1127.1	
C4	25	10	23K646499	PTT-10025	NLW25-10	TT10X25	ML25-12	TE-1118	
C5	50	10	23K644671	XPP-10050	NLW50-10	TT10X50	ML50-12	TE-1119	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	10000		C80V103AM	DDM-103	H-05S1	CCD-103	TA-110	TG-S10
C7	10000		C80V103AM	DDM-103	H-05S1	CCD-103	TA-110	TG-S10
C8	10000		C80V103AM	DDM-103	H-05S1	CCD-103	TA-110	TG-S10
C9	10000		C80V103AM	DDM-103	H-05S1	CCD-103	TA-110	TG-S10
C10	10000		C80V103AM	DDM-103	H-05S1	CCD-103	TA-110	TG-S10
C11	.08 50V	#8R129204						2WF-S82
C12	.04 50V	#8R129358						

\# Motorola Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	1/4	18K646486					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	8200Ω	
R3	33K	
R4	680Ω	
R5	680K	
R6	68K	
R7	2200Ω	
R8	470Ω	
R9	1800Ω	

ITEM No.	RATING	REMARKS
R10	27K	
R11	5600Ω	
R12	560Ω	
R13	2700Ω	
R14	18K	
R15	150K	
R16	100Ω	
R17	2200Ω	

ITEM No.	RATING	REMARKS
R18	8200Ω	
R19	56K	
R20	220Ω	
R21	100Ω	
R22	1800Ω	
R23	120Ω	
R24	1800Ω	
R25	120Ω	

PRINTED BOARD

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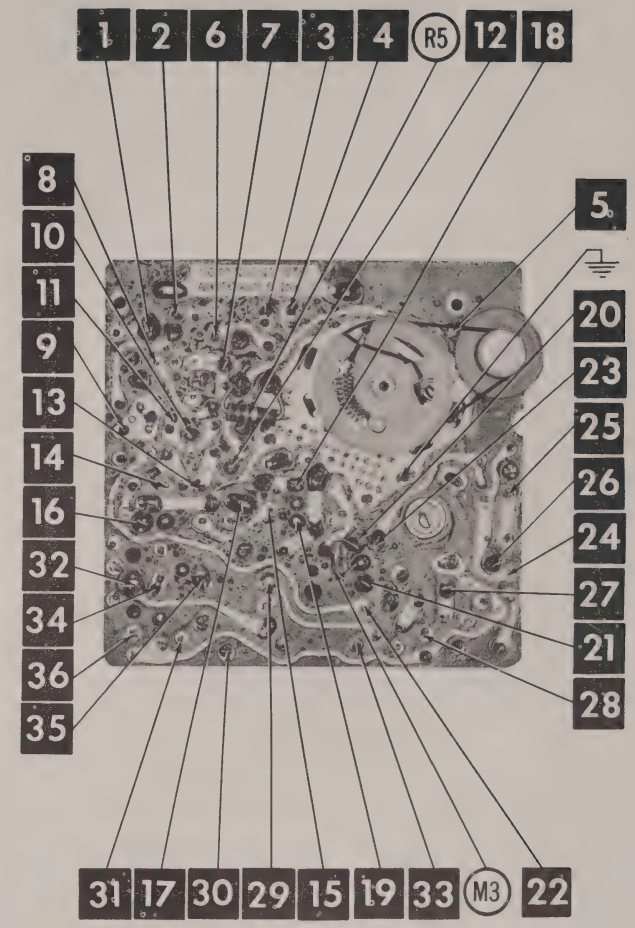


MOTOROLA MODELS X16B, X16G, X16N (Ch. HS-797)

FOLDER 9

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	24C646302				
L2	Osc. Coil	24C640352				
L3	1st IF Trans.	24C646244				
L4	2nd IF Trans.	24C646244				
L5	3rd IF Trans.	24K646245				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.6	1	25B646280					
		SEC. 2						
		1						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	2 3/4"	PM	35-40Ω	50B646279		

BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			930 *		1015 *		M-15R*	* 4 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60	48C640675	1N60	1N60	AVC (Pigtail)
M3	1N60	48C640675	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

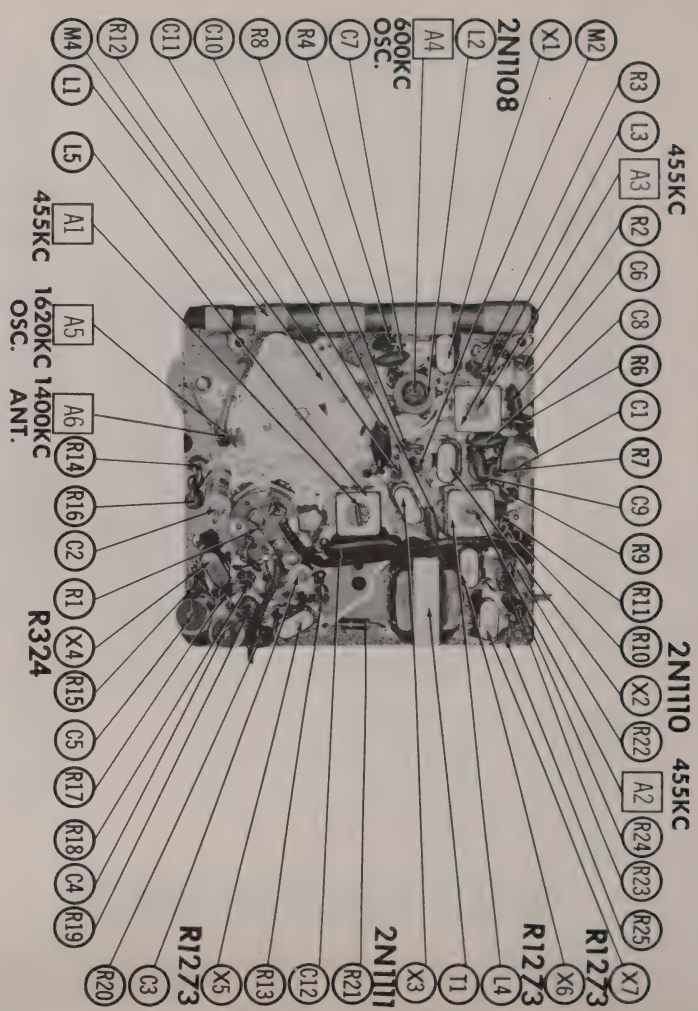
ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Tuning Cap.	19B646282 or 19B646283	2 Gang 2 Gang
	Printed Board	84C646797	Less All Components

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	34B646488	Scale
Lens	61A643706	Dial
Knob	36B646313	Tuning
Knob	36B646307	Volume
Cabinet Back	1V646594	Blue, Model X16B
Cabinet Back	1V646595	Green, Model X16G
Cabinet Back	1V646596	Tan, Model X16N
Cabinet Front	1V646591	Blue, Model X16B
Cabinet Front	1V646592	Green, Model X16G
Cabinet Front	1V646593	Brown, Model X16N
Handle	55K646305	Blue, Model X16B
Handle	55K646306	Green, Model X16G
Handle	55B646304	Brown, Model X16N

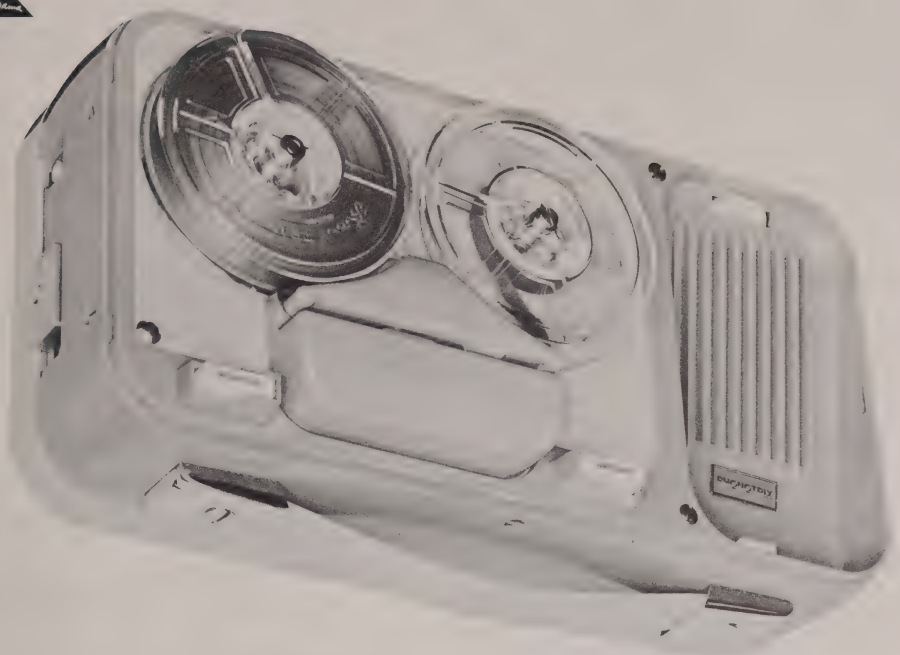
CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

PHONO TRIX MODELS
4334, 5334

PHONO TRIX MODELS
4334, 5334



PHONO TRIX MODELS
4334, 5334

GENERAL INFORMATION

Phono Trix Models 4334 and 5334 tape recorders record and play back two tracks of material on standard-width recording tape, thus doubling playing time of a 3" reel with no loss of frequency response or quality. The tape speed is 3-3/4 ips.

Recordings can be made from a radio, television receiver, or phonograph, in addition to those made directly from a microphone.

Using both tracks of tape, recording time is 44 minutes (22 minutes per track).

The power supply is self-contained, consisting of 4 leak-proof 1-1/2 volt batteries. Power may also be obtained from a 6-volt storage battery or from a 110-volt, 60-cycle AC power line using the special adapter.

Supplied By:

Matthew Stuart & Company, Inc.
156 Fifth Avenue
New York 10, New York

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of CQ441

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OPERATION OF CONTROLS

Record-Playback Switch

To record, move the Record-Playback switch toward the front of the recorder (red end of switch showing). When playback of a recording is desired, the Record-Playback switch is moved toward the rear of the recorder (blue end of switch showing).

Forward Key

Depress the Forward key to playback or record a tape. To stop the tape push the Rewind key halfway down.

Rewind Key

Depress the Rewind key to rewind the tape onto the supply reel. To stop the tape push the Forward key halfway down.

NOTE: The Record-Playback switch must be in the Playback position (blue showing) before the recorder will rewind the tape.

OPERATING INSTRUCTIONS

Threading Tape

1. Place a reel of tape on the left (supply) spindle and an empty reel on the right (takeup) spindle, making sure reel slots engage pins on spindle.

NOTE: The supply reel must be placed on the left spindle with the beginning of the tape coming off in a clockwise direction.

2. Unwind approximately 8 inches of tape from the left (supply) reel. Hold a section of tape taut and insert in tape slot, making sure dull side of tape faces front of recorder (away from reels).

3. Insert free end of tape into one of the slots in hub of empty reel. Turn reel several turns clockwise until tape is secured to reel and all slack is taken up between reels.

To Record From Microphone

Insert microphone into input (red) jack at left end of recorder. Thread tape as described under "Threading Tape". Place Record-Playback switch in Record (red showing) position. Move loudspeaker switch to the left. Depress Forward key and adjust Volume control to about 1/4 of full volume. Record a small section and check recording for possible re-setting of Volume control.

To Record From Radio

Adjust volume control of radio to normal level for listening. Connect the loudspeaker (or external speaker jack) to the input (red) jack of the recorder. With the Record-Playback switch in the Record position depress the Forward key. Adjust the Volume control for normal recording. If the recorder loudspeaker shows signs of overloading or distortion, reduce the radio volume control.

To Record From Phonograph

Follow instructions under "To Record From Radio", from either loudspeaker or external speaker jack. When recording is made direct from a pickup, install a 500K ohm resistor between one side of the pickup and the center lead of the connecting cable.

To Wind Or Rewind Tape

To wind tape onto reel, place Record-Playback switch in Playback position. Depress Forward key. When desired section of tape is reached, push Rewind key halfway down. To rewind tape place Record-Playback switch in Playback position then depress Rewind key. To stop rewind, push Forward key halfway down.

To Play a Recording

1. Follow instructions under "Threading Tape".
2. Move Record-Playback switch to Playback.
3. Push loudspeaker switch to the right.
4. Depress Forward key.
5. Adjust Volume control for desired listening level.
6. To stop tape, push Rewind key halfway down.

CAUTION: Be sure Record-Playback switch is in Playback position to avoid erasing recorded material.

Erasing Recorded Material

Any recording on tape is automatically erased before a new recording is put on tape when unit is in Record. To erase a recording without putting anything on tape, follow normal recording procedure, but leave microphone disconnected and Volume control at minimum.

To Edit and Splice Tape

NOTE: Since one track cannot be edited and spliced without affecting the other track, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections can be spliced for re-use.

2. For best results, cut tape at a slight diagonal, join ends with splicing tape on the glossy side. Trim off any excess width.

Dual-Track Recording

One-half the tape width is recorded at a time,

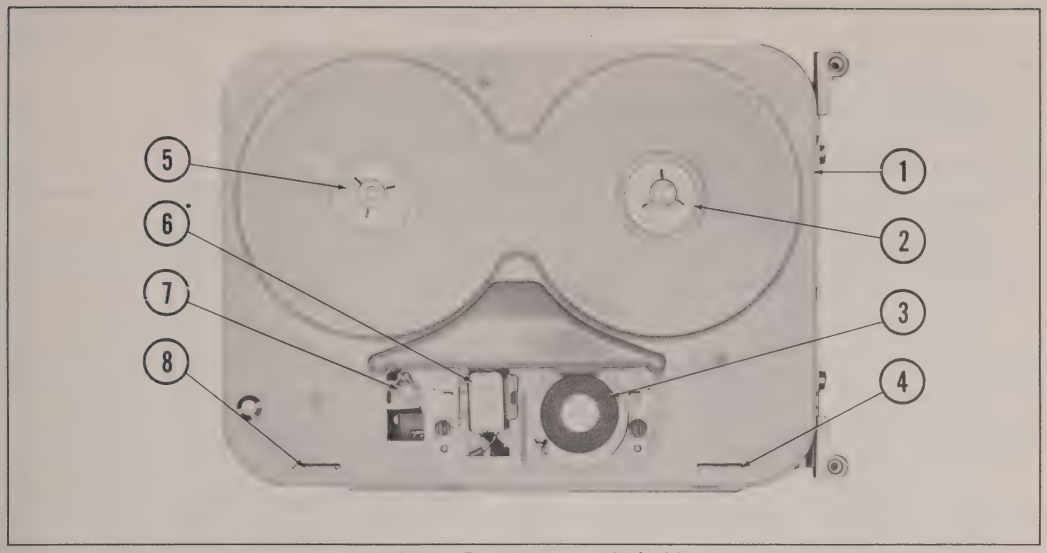


FIG.1 TOP VIEW OF MECHANISM

which results in two-track recording. This two-track operation is accomplished in the following manner:

1. After a reel of tape has been recorded and all tape wound onto right reel, push Rewind key halfway down.
2. Remove reels from recorder; turn full reel over and place it on left spindle.
3. Properly thread tape and proceed with recording.
4. After second track has been recorded, first track can be played without rewinding, by reversing reel as described in step 2.

DISASSEMBLY

To Remove Recorder From Case

1. Remove top and bottom case covers.
2. Remove two retaining screws on top of case.
3. Remove retaining screws on sides of case.
4. Place Record-Playback switch in Playback position. Remove retaining screw and switch button.
5. Remove 4 screws from component board covering speaker. Remove board.
6. Remove 4 screws from speaker.
7. Remove entire unit from case.

To Remove Battery Plate From Chassis

1. Bend back two metal tabs securing amplifier to motor board (16).
2. Move right lockslide toward motor; move left lockslide toward amplifier board.
3. Remove lockslides.
4. Lift motor board away from chassis.

NOTE: Top of amplifier board is now readily accessable. To replace defective components in amplifier, cut leads close to body of defective part. Solder new component on original leads.

CLEANING

Pressure roller (3), capstan shaft, tape guides, and recording head (6) may accumulate tape oxide coating, worn off tape as it passes these parts. This accumulation will cause poor performance and should be removed with a soft, lint-free cloth dipped in alcohol.

WARNING: Do not use any cleaning solvent which contains oil or Tetrachloride.

LUBRICATION

Clean all bearings and bearing surfaces with a clean soft cloth. Apply a thin film of oil on bearing surfaces.

HEAD REPLACEMENT

Record-Playback Head

1. Pry up four metal tabs (two on each side of head).
2. Remove screw and washer.
3. Slide head (6) out of head shield.
4. Unsolder head wires.
5. To install new head, reverse above procedure.

Erase Head

1. Disconnect spring under head.
2. Remove "C" washer.
3. Remove erase head assembly from mounting spindle.
4. To install new erase head reverse above procedure.

TROUBLE CHART

Symptom	Cause	Remedy
Does not record.	1. Defective Record-Playback head (6).	1. Replace head (6).
	2. Defective Record - Playback switch.	2. Replace switch.
	3. Tape pressure pad holding spring weak or broken.	3. Replace spring.
	4. Broken head wire.	4. Repair wire.
Records, does not play back.	1. Defective Record - Playback switch.	1. Replace switch.
Flutter.	1. Defective pressure roller (3).	1. Replace pressure roller (3).
	2. Defective drive wheel (11).	2. Replace drive wheel (11).
Recorder speed too slow.	1. Weak batteries.	1. Replace batteries.
	2. Oil or grease on drive wheels.	2. Clean drive wheels.
	3. Main drive wheel (11) loose.	3. Tighten main drive wheel (11).
	4. Dirt or oil on pressure roller (3).	4. Clean pressure roller (3) with alcohol.
	5. Shafts in mechanism binding.	5. Clean and lubricate with fine oil.
No drive on Record or Rewind.	1. Dead batteries.	1. Replace batteries.
	2. Defective Record - Playback switch.	2. Replace Record-Playback switch.
	3. Defective motor (17).	3. Replace motor (17).

MECHANICAL PARTS LIST

Ref. No.	Description
1	Dress Plate
2	Takeup Spindle
3	Pressure Roller
4	Rewind Key
5	Supply Spindle
6	Record-Playback Head
7	Erase Head
8	Forward Key
9	Supply Spindle Drive Wheel

Ref. No.	Description
10	Plate
11	Main Drive Wheel
12	Takeup Spindle Drive Wheel
13	Bracket
14	Spring
15	Spring
16	Motor Board
17	Motor

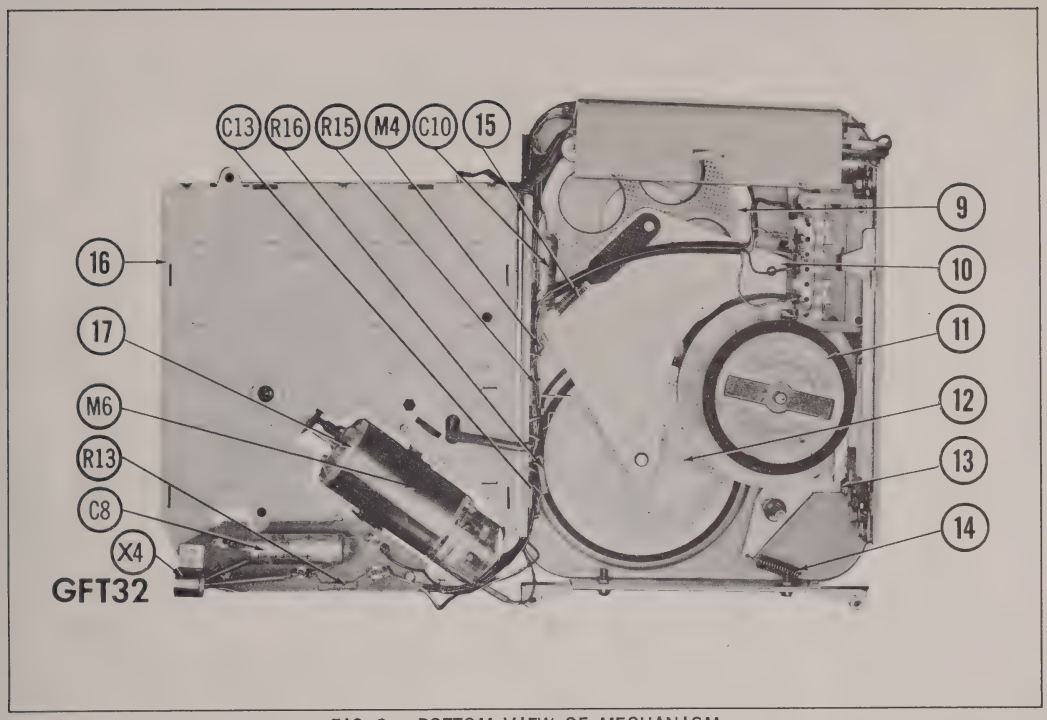
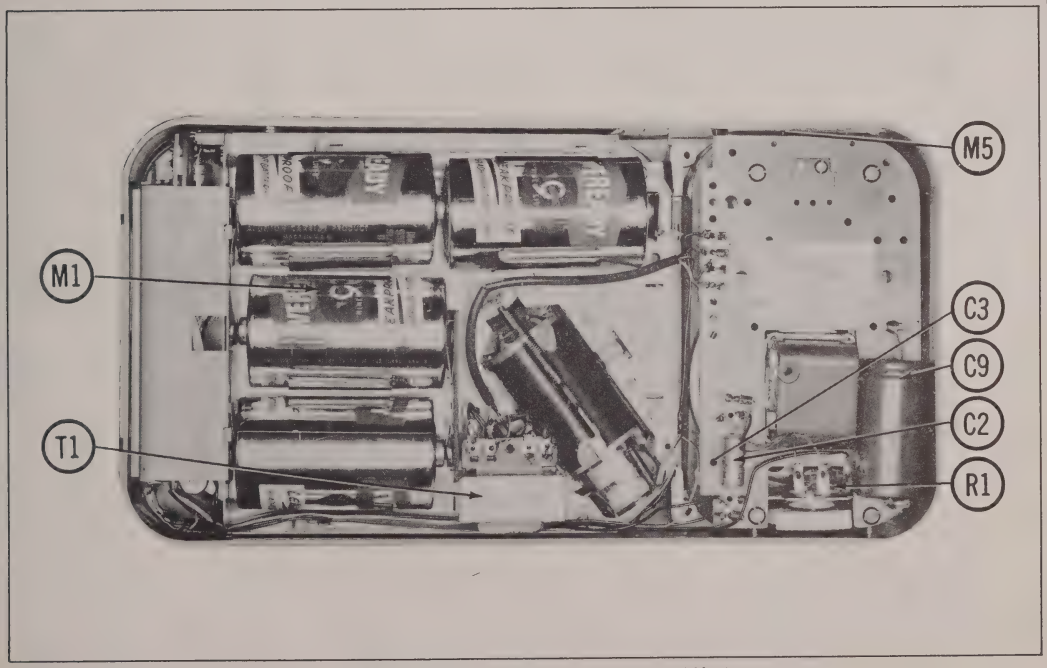
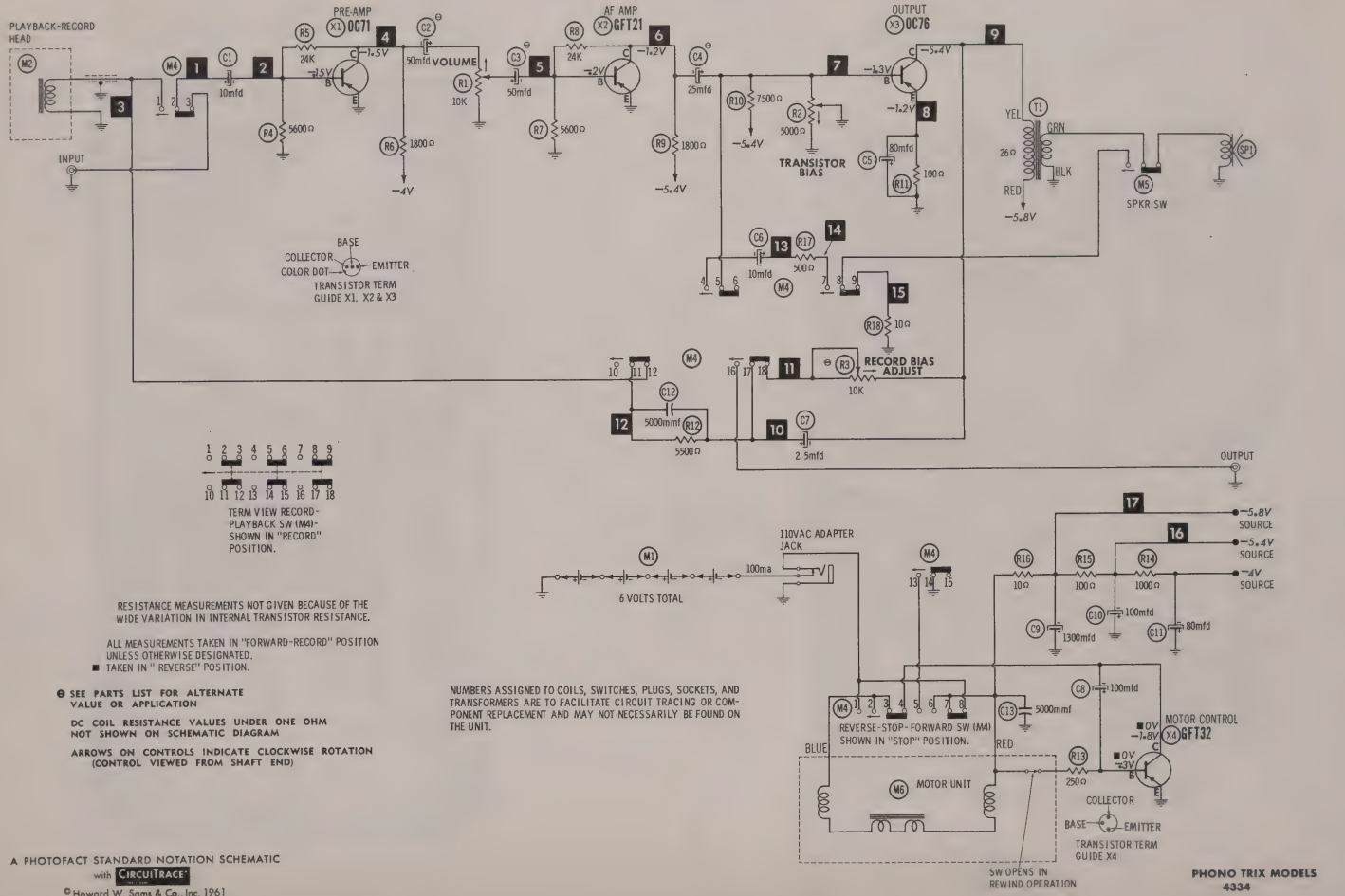


FIG.2 BOTTOM VIEW OF MECHANISM



ELECTRICAL CHASSIS - BOTTOM VIEW



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

ALL MEASUREMENTS TAKEN IN "FORWARD-RECORD" POSITION UNLESS OTHERWISE DESIGNATED.

■ TAKEN IN "REVERSE" POSITION.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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PHONO TRIX MODELS 4334

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	OC71	Preamplifier				
X2	GFT21	Audio Amplifier				
X3	OC76	Audio Output				
X4	GFT32	Motor Control				

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHONO-TRIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	3	E519	XPP-3010	NLW10-3	TT3X10	ML10-3	TE-1053	
C2	50	3		XPP-3050	NLW50-3	TT6X50	ML50-3	TE-1058	①
C3	50	3		XPP-3050	NLW50-3	TT6X50	ML50-3	TE-1058	①
C4	25	3		XPP-3025	NLW25-3	TT3X25	ML25-3	TE-1055	②
C5	80	6		PWE6100	NLW100-6	TT6X80	ML75-6	TE-1101.5	
C6	10	3		XPP-3010	NLW10-3	TT3X10	ML10-3	TE-1053	
C7	2.5	25	E518	XPP-25003	NLW3-25	TT50X4	MLV2-25	TE-1201.1	
C8	100	12.5	E522	SRE12V100	NLW100-15	TT15X100	ML100-15	TE-1162	
C9	1300	8							
C10	100	12	E524	SRE12V100	NLW100-12	TT15X100	ML100-15	TE-1135	
C11	80	6		PWE6100	NLW100-6	TT6X80	MLV100-6	TE-1101.5	

① Some versions may use 25mfd in this application.
② Some versions may use 32mfd in this application (Part #E520).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHONO TRIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	½	E443					Volume
R2	5000Ω	½	E528					Transistor Bias
R3	10K	½						Record Bias Adjust, Note 1

Note 1. Used in Printed Circuits only.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	5600Ω	
R5	24K	
R6	1800Ω	
R7	5600Ω	
R8	24K	

ITEM No.	RATING	REMARKS
R9	1800Ω	
R10	7500Ω	
R11	100Ω	
R12	5500Ω	
R13	250Ω	

ITEM No.	RATING	REMARKS
R14	1000Ω	
R15	100Ω	
R16	10Ω	
R17	500Ω	
R18	10Ω	

PRINTED BOARD

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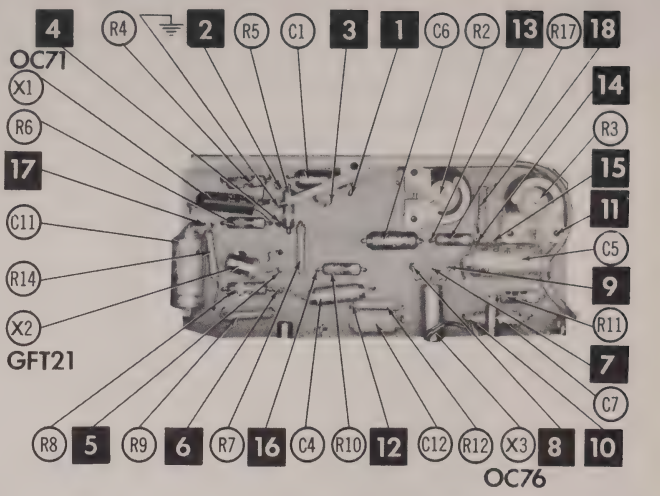


TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PHONO TRIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1500Ω	10-12Ω	E442					

SPEAKER

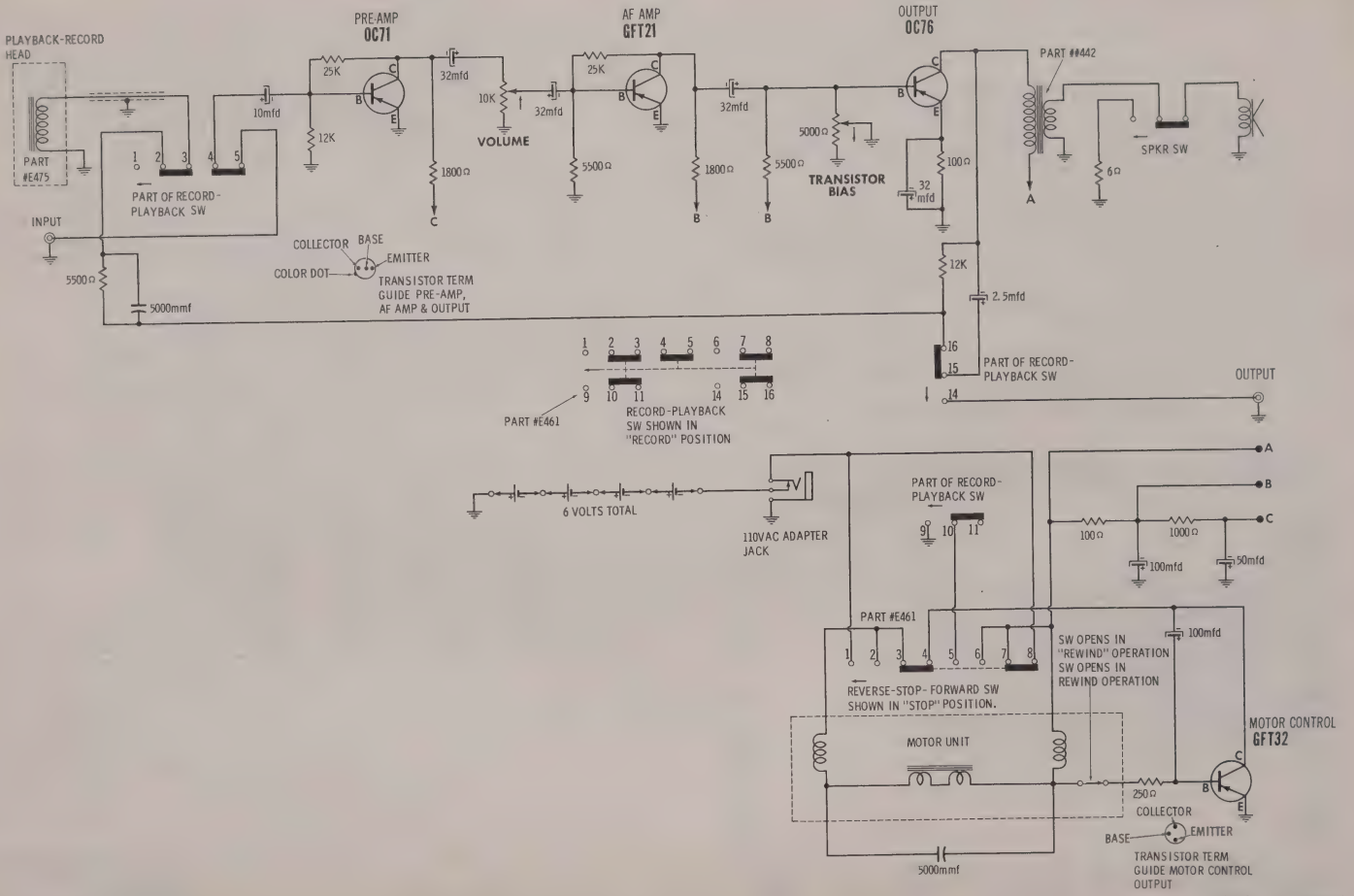
ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHONO TRIX PART No.	QUAM PART No.	
SP1	2 3/4"	PM	10-12Ω	E440	27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	PHONO TRIX PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			230 *		A-100 *		M-13R *	* 4 Required

MISCELLANEOUS

ITEM No.	PART NAME	PHONO TRIX PART No.	NOTES
M2	Head Ass'y.	E475	Playback & Record
M3	Head Ass'y.	E441	Erase
M4	Switch	E461	Record-Playback - Reverse-Stop-Forward(Slide Type)
M5	Switch	5449	Speaker (Slide Type)
M6	Motor	E431	Drive



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PHONO TRIX MODELS 5334

PHOTOFACT® Folder

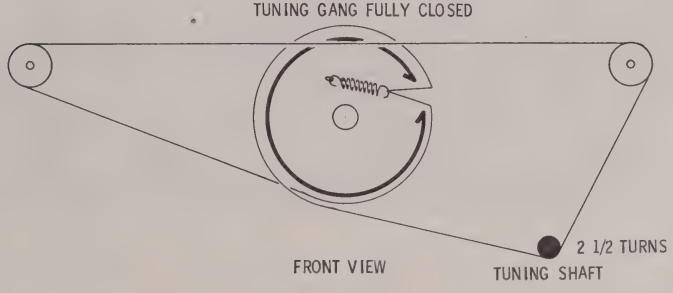
**REALISTIC
MODEL T-IV**

REALISTIC
MODEL T-IV

REALISTIC
MODEL T-IV

TRADE NAME	Realistic Model T-IV		
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.		
TYPE SET	AC Operated 9 Tube FM-AM Tuner		
POWER SUPPLY	105 - 120 Volts AC, 50-60 Cycles	RATING	27 Watts, .27 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	530 - 1700KC	FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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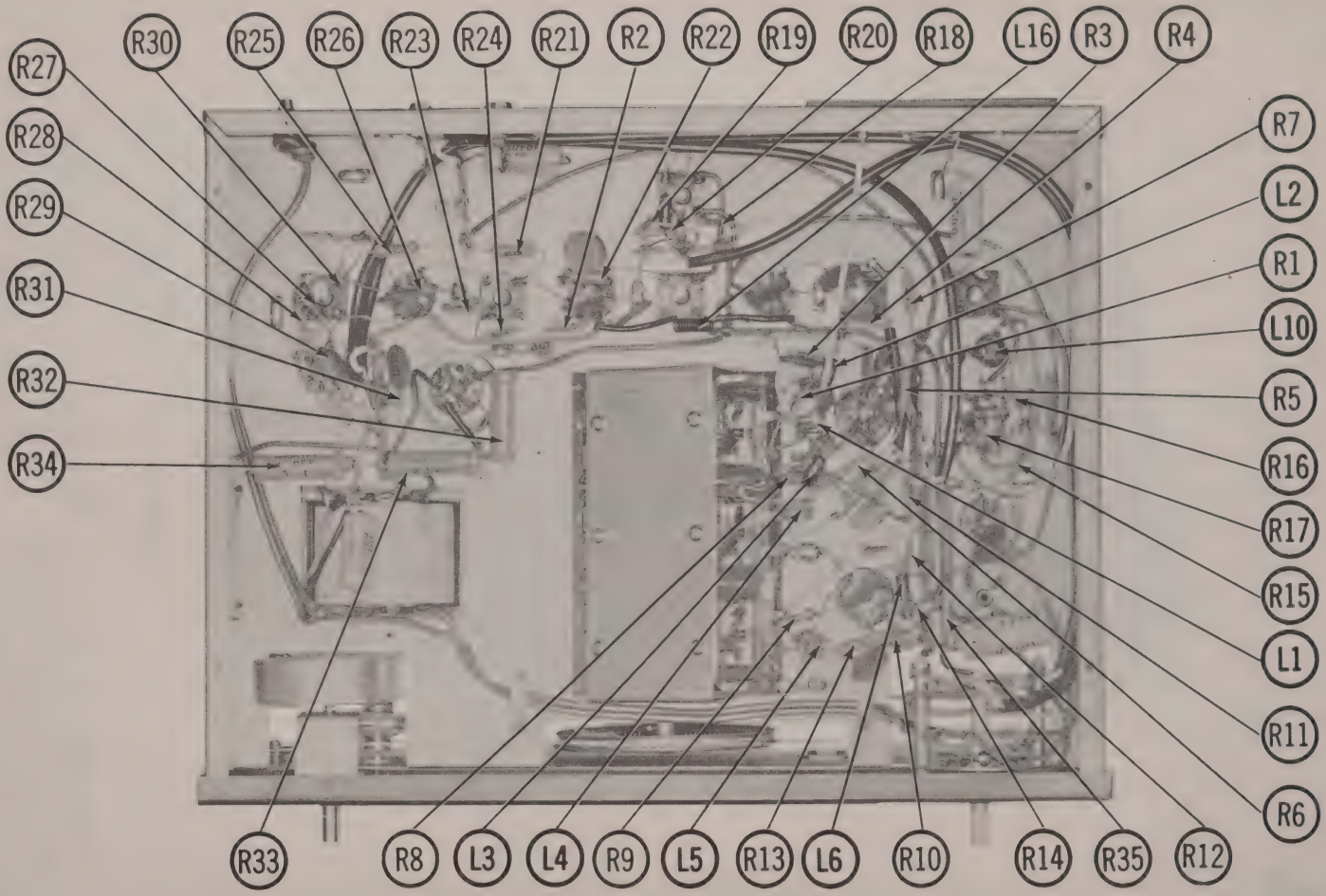
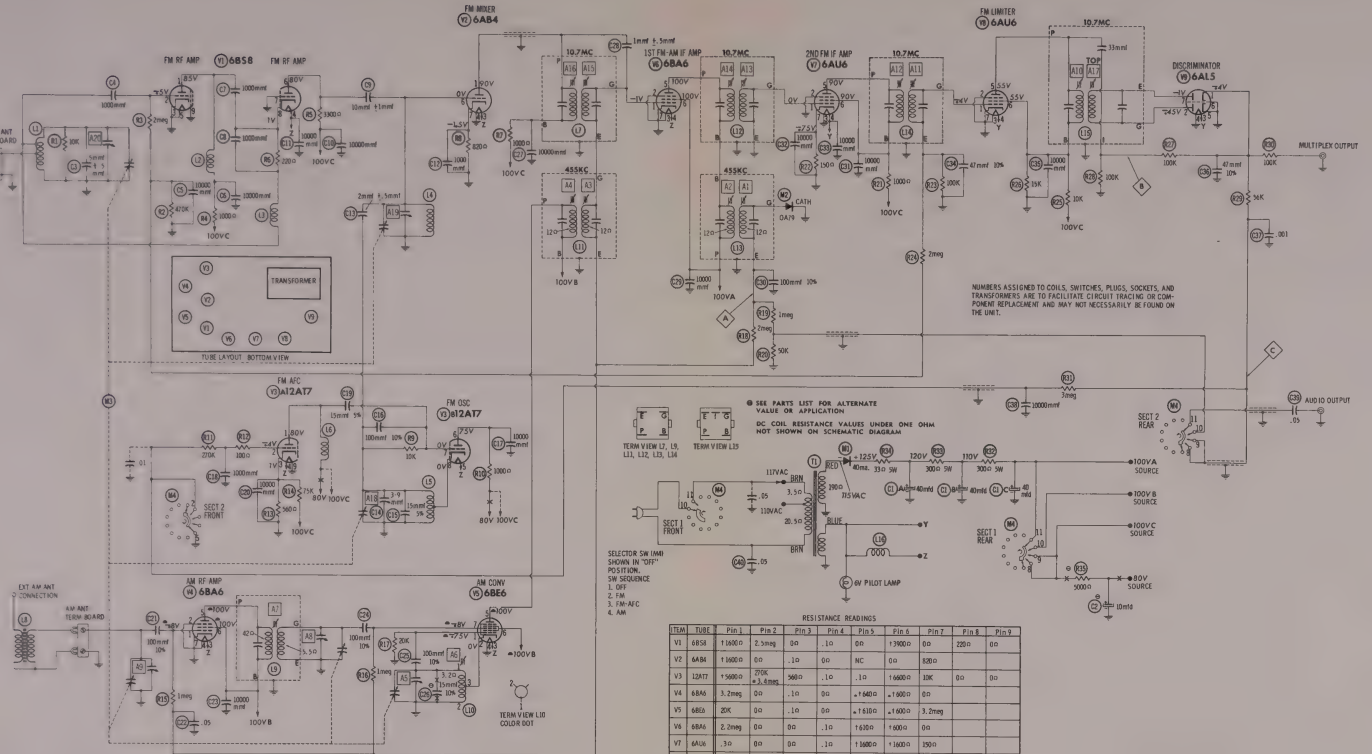
KL125

SET 514 FOLDER 11



CHASSIS BOTTOM VIEW — RESISTOR & INDUCTOR IDENT.


FM MIXER V2 6AB4
FM RF AMP V1 6BS8
FM RF AMP
1ST FM-AM IF AMP V6 6BA6
2ND FM IF AMP V7 6AU6
FM LIMITER V8 6AU6
DISCRIMINATOR V9 6AL5
10.7MC
455KC
EXT FM ANT TERM BOARD
MULTIPLEX OUTPUT
TRANSFORMER
TUBE LAYOUT BOTTOM VIEW
FM AFC V3 A12AT7
FM OSC V4 12AT7
SECT 2 FRONT
SECT 2 REAR
SECT 1 FRONT
SECT 1 REAR
AUDIO OUTPUT
100VA SOURCE
100V B SOURCE
100V C SOURCE
80V SOURCE
EXT AM ANT CONNECTION
AM ANT TERM BOARD
AM RF AMP V4 6BA6
AM CONV V5 6BE6
TERM VIEW L10 COLOR DOT
TERM VIEW L35
TERM VIEW L7, L9, L11, L12, L13, L14
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
SELECTOR SW (M4) SHOWN IN "OFF" POSITION.
SW SEQUENCE
1. OFF
2. FM
3. FM-AFC
4. AM
6V PILOT LAMP
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	↑1600Ω	2.5meg	0Ω	.1Ω	0Ω	↑3900Ω	0Ω	225Ω	0Ω
V2	6AB4	↑1600Ω	0Ω	.1Ω	0Ω	NC	0Ω	820Ω		
V3	12AT7	↑5600Ω	270K ⇌1.6meg	560Ω	.1Ω	.1Ω	↑6600Ω	10K	0Ω	0Ω
V4	6BA6	3.2meg	0Ω	.1Ω	0Ω	⇌↑640Ω	⇌↑600Ω	0Ω		
V5	6BE6	20K	0Ω	.1Ω	0Ω	⇌↑610Ω	⇌↑600Ω	3.2meg		
V6	6BA6	2.2meg	0Ω	0Ω	.1Ω	↑62Ω	↑600Ω	0Ω		
V7	6AU6	3Ω	0Ω	0Ω	.1Ω	↑1600Ω	↑1600Ω	250Ω		
V8	6AU6	100K	0Ω	0Ω	.1Ω	↑10K	↑10K	0Ω		
V9	6AL5	200K	100K	.1Ω	0Ω	0Ω	0Ω	100K		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
⇌ MEASURED IN "AM" POSITION.
↑ MEASURED FROM OUTPUT OF M1.
■ MEASURED IN "FM-AFC" POSITION. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. no signal applied for voltage measurements.

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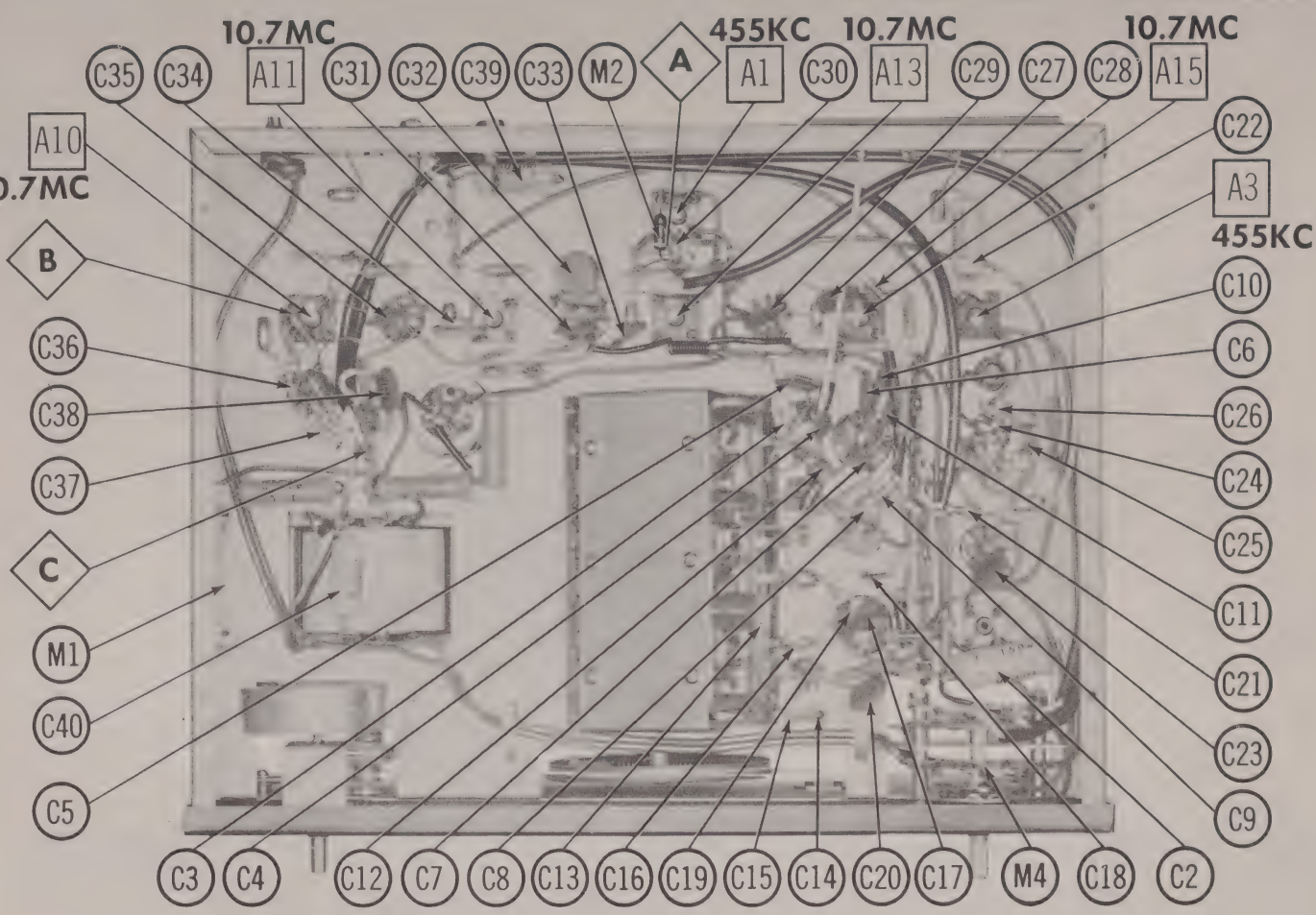
REALISTIC MODEL T-IV



CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A4, A6, A7, A10 thru A17.... GENERAL CEMENT #8721, 8722
WALSCO #2519
A5, A8, A9, A18, A19, A20..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	(AM) Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC Signal.	"	A6, A7	"
4.	"	1400KC	1400KC Signal	"	A8, A9	Adjust for maximum deflection. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .001mfd to pin 6 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓑ. Common to chassis	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .001mfd to pin 6 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 47K to point Ⓑ. Low side to chassis.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp to point Ⓒ. Low side to chassis.	A17	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of cross-over lines.

AM ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM Antenna terminals with 270Ω in high side.	96MC (Unmod.)	(FM) 96MC	DC probe thru 1meg to point Ⓑ. Common to chassis.	A18, A19, A20	Adjust for maximum deflection.

FIG. 1

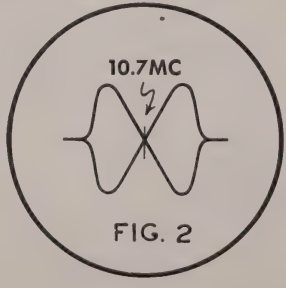


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BS8	V6	1st FM-AM IF Amplifier	6BA6
V2	FM Mixer	6AB4	V7	2nd FM IF Amplifier	6AU6
V3	FM Osc. -FM AFC	12AT7	V8	FM Limiter	6AU6
V4	AM RF Amplifier	6BA6	V9	Discriminator	6AL5
V5	AM Converter	6BE6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA: REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		AFH3-10	C0090	FP311.5	TMT-3127	TVL-3440	
B	40	150							
C	40	150							
C2	10	150		PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	Note 1

Note 1. Not used in some versions.

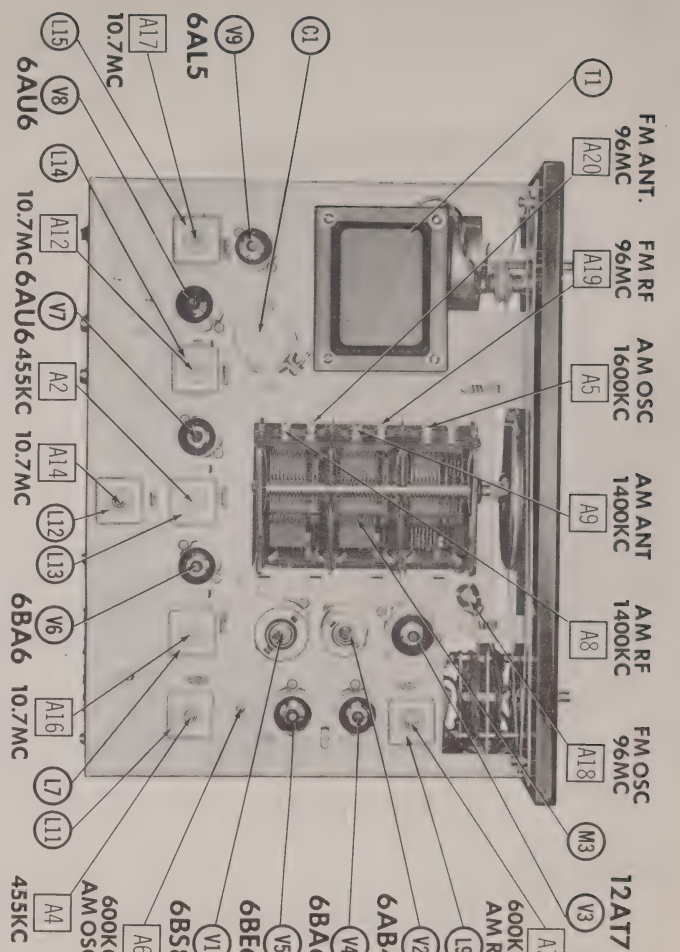
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	5 + .5mmf		NPO-SI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	10 + 1mmf		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	2 + .5mmf		NPO-SI 2.0	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C14	3-9			829-10				
C15	15 5%			TCZ-15	C10Q15C	CM-19B-150J	CNO-415	10TCC-Q15
C16	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	15 5%			TCZ-15	C10Q15C	CM-19B-150J	CNO-415	10TCC-Q15
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	CNO-410	10TS-T10
C22	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C25	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C26	15 10%	Note 1	NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	1 + .5mmf		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C37	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D1
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C40	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



REALISTIC
MODEL T-IV

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	10K	
R2	470K	
R3	2meg	
R4	1000Ω	
R5	3300Ω	
R6	220Ω	
R7	1000Ω	
R8	820Ω	
R9	10K	
R10	1000Ω	
R11	270K	
R12	100Ω	

ITEM No.	RATING	REMARKS
R13	560Ω	
R14	75K	
R15	1meg	
R16	1meg	
R17	20K	
R18	2meg	
R19	1meg	
R20	50K	
R21	1000Ω	
R22	150Ω	
R23	100K	
R24	2meg	

ITEM No.	RATING	REMARKS
R25	10K	
R26	15K	
R27	100K	
R28	100K	
R29	56K	
R30	100K	
R31	3meg	
R32	300Ω 5W	IRC#PW5-300Ω
R33	300Ω 5W	IRC#PW5-300Ω
R34	33Ω 5W	IRC#PW5-33Ω
R35	5000Ω	Note 1

Note 1. Not used in some versions.

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		REALISTIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	0A79			1N295	1N295	AM Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
M3	Tuning Cap.		6 Gang, (AM Sections: Ant. 18-466mmf, RF 22-475mmf, Osc. 19-215mmf)
M4	Switch		Function (Rotary Wafer)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		REALISTIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	FM Ant. Trans.					
L2	RF Choke		BC-563	4606		2uh
L3	RF Choke		BC-563	4606		2uh
L4	FM RF Coil					
L5	FM Osc. Coil					
L6	RF Choke		BC-564	4608		3.9uh
L7	1st FM IF Trans.		FM-254 ▲	1463 ▲		▲ Fabricate Mounting.
L8	Loopstick		BC-419	705-A		
L9	AM RF Trans.		BC-382 ▲	72-RF ▲		
L10	AM Osc. Coil		BC-393 *	70-OSC *		* Drill Mounting Hole.
L11	1st AM IF Trans.		BC-352 ▲	12-C1 ▲		
L12	2nd FM IF Trans.		FM-254 ▲	1463 ▲		
L13	2nd AM IF Trans.		BC-353 ▲	12-C2 ▲		
L14	3rd FM IF Trans.		FM-254 ▲	1463 ▲		
L15	Discriminator		FM-253 ▲	1464 ▲		
L16	Fil. Choke		BC-562	4604		1.5uh

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	REALISTIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .27A	115V @ .040A	6.3V @ 3A						

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	REALISTIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.040A	*				* Selenium Type

PHOTOFACT® Folder with CIRCUITRACE®

**STEELMAN
MODELS 603, 703**

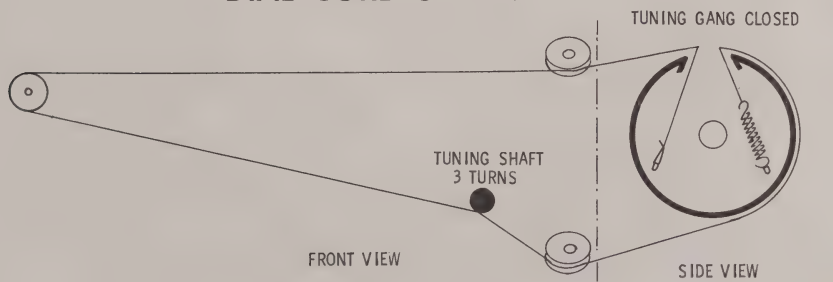
STEELMAN
MODELS 603, 703

STEELMAN
MODELS 603, 703

TRADE NAME	Steelman Models 603, 703		
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.		
TYPE SET	AC Operated 7 Tube FM-AM Tuner (Model 703 only), 6 Tube Stereo Phono Amplifier and 4 Speed Automatic Record Changer		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	82 Watts, .76 Amp. @ 117 Volts AC (Tuner & Amp.) 56 Watts, .58 Amp. @ 117 Volts AC (Amp. only)
TUNING RANGE—BROADCAST	530 — 1650KC	FREQ. MOD.	88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300069 — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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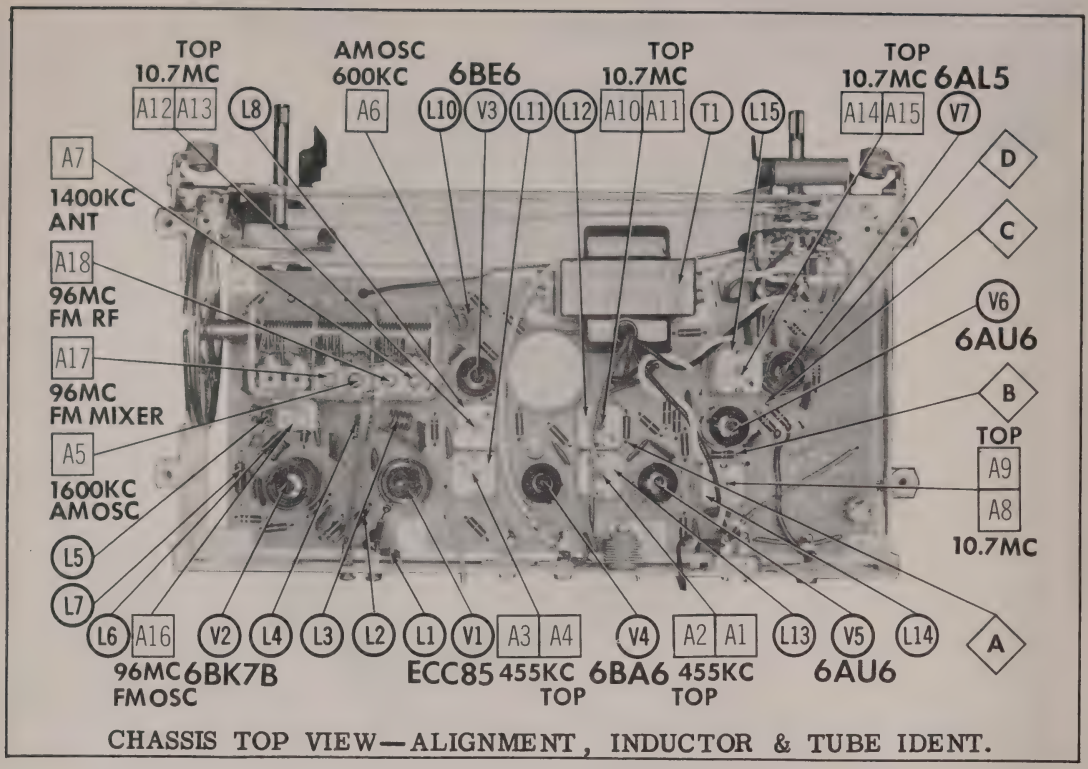
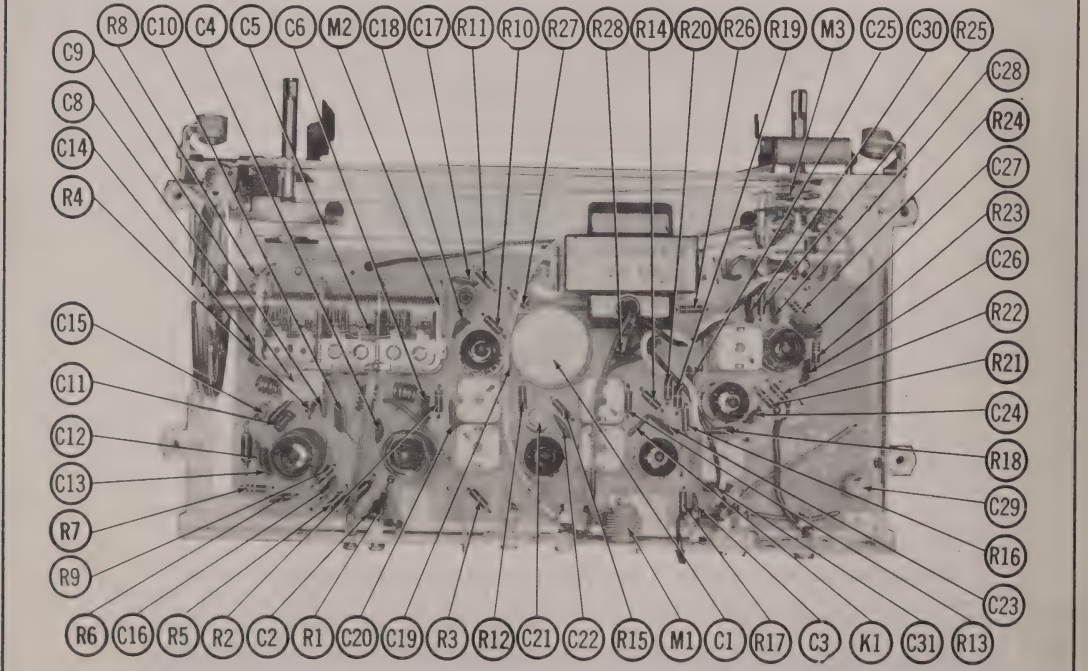
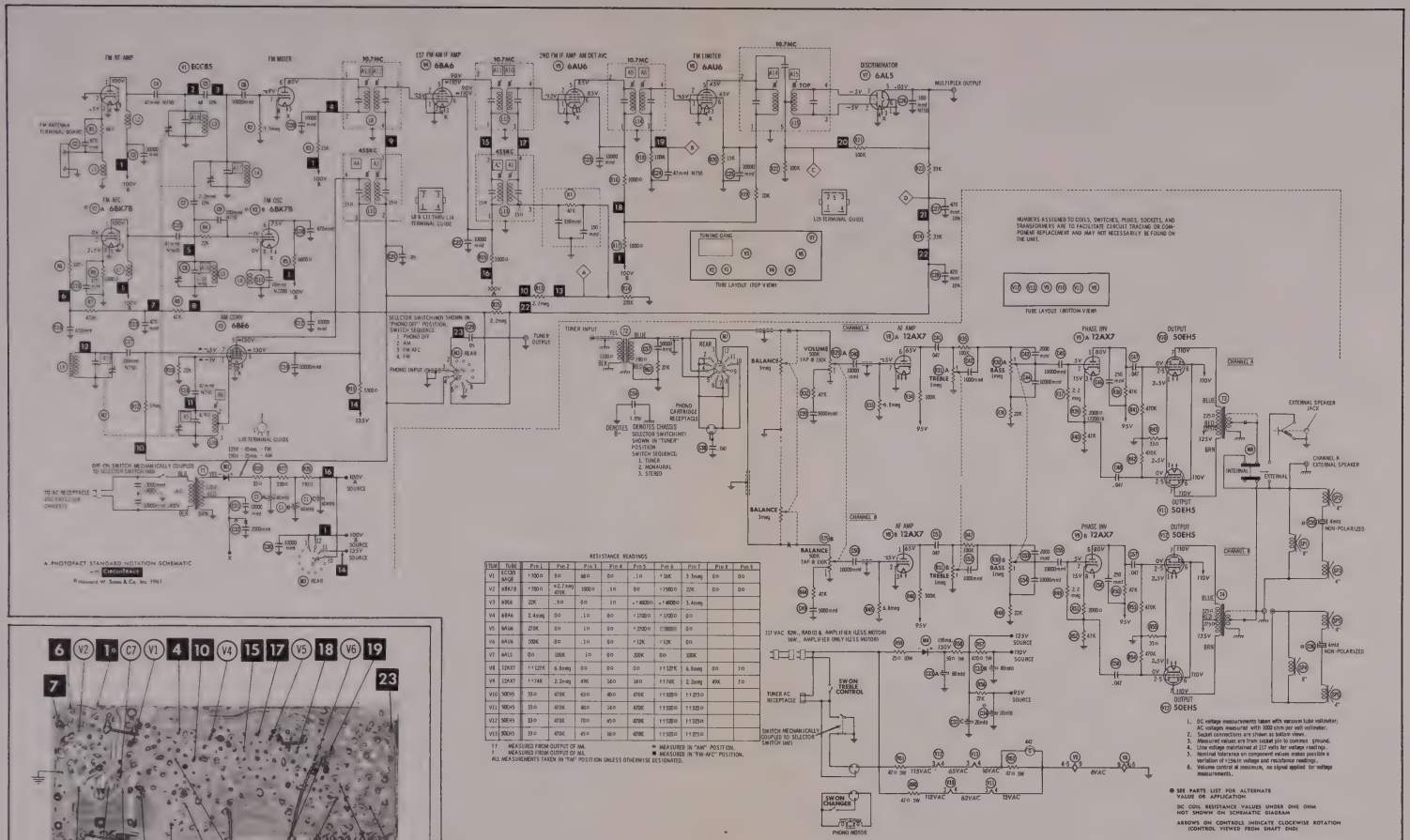
SET 514 FOLDER 12



CHASSIS TOP VIEW—ALIGNMENT, INDUCTOR & TUBE IDENT.

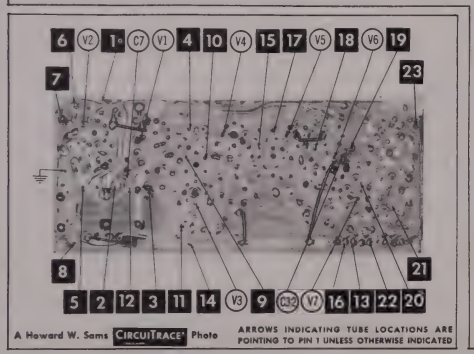


CHASSIS TOP VIEW— CAPACITOR, RESISTOR & MISC. IDENT.


FM RF AMP
V1 6CC85
FM MIXER
10.7MC
1ST FM-AM IF AMP
V4 6BA6
2ND FM IF AMP AM DET AVC
V5 6AU6
FM LIMITER
V6 6AU6
DISCRIMINATOR
V7 6AL5
MULTIPLEX OUTPUT
FM ANTENNA TERMINAL BOARD
FM AFC
V9A 6BK7B
FM OSC
V9B 6BK7B
AM CONV
V3 6BE6
455KC
L1 THRU L14 TERMINAL GUIDE
L15 TERMINAL GUIDE
TUNING GANG
TUBE LAYOUT (TOP VIEW)
TUBE LAYOUT (BOTTOM VIEW)
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SELECTOR SWITCH (NOT SHOWN IN "PHONO OFF" POSITION. SWITCH SEQUENCE: 1. PHONO OFF 2. AM 3. FM AFC 4. FM
PHONO INPUT
TUNER OUTPUT
TUNER INPUT
PHONO CARTRIDGE RECEPTACLE
DENOTES CHASSIS
DENOTES (SELECTOR SWITCH UNIT) SHOWN IN "TUNER" POSITION SWITCH SEQUENCE: 1. TUNER 2. MONAURAL 3. STEREO
CHANNEL A
CHANNEL B
AF AMP
V10 12AX7
PHASE INV
V9 12AX7
OUTPUT
V12 50EH5
VOLUME 500K TAP @ 150K
BALANCE 3meg
BALANCE 500K TAP @ 250K
TREBLE 1meg
BASS 1meg
EXTERNAL SPEAKER JACK
INTERNAL
EXTERNAL
CHANNEL A EXTERNAL SPEAKER
4ohm NON-POLARIZED
OFF-ON SWITCH MECHANICALLY COUPLED TO SELECTOR SWITCH UNIT
TO AC RECEPTACLE
L12 TERMINAL GUIDE
115V - 60mA - FM 150V - 25mA - AM
100V SOURCE
125V SOURCE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
CIRCUITRACE
© Howard W. Sams & Co. Inc. 1961
RESISTANCE READINGS
TUNER AC RECEPTACLE
SW ON TREBLE CONTROL
SWITCH MECHANICALLY COUPLED TO SELECTOR SWITCH UNIT
SW ON CHANGER
PHONO MOTOR
115VAC
62VAC
19VAC
95V SOURCE
110V SOURCE
125V SOURCE
6VAC
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±20% in voltage and resistance readings.
6. Volume control at minimum, no signal applied for voltage measurements.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

TEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CC85 AFC#	*700 0	0 0	68 0	0 0	.1 0	* 16K	3.7meg	0 0	0 0
V2	6BK7B	*700 0	+2.7meg 410K	100 0	.1 0	0 0	*1500 0	22K 0	0 0	0 0
V3	6BE6	22K	3 0	0 0	.1 0	+.4000 0	+.4000 0	3.4meg		
V4	6BA6	2.4meg	0 0	.1 0	0 0	*1500 0	*1500 0	0 0		
V5	6AU6	270K	0 0	.1 0	0 0	*2500 0	0	0		
V6	6AU6	100K	0 0	.1 0	0 0	*12K	*12K	0 0		
V7	6AL5	0 0	100K	.1 0	0 0	200K	0 0	330K		
V8	12AX7	* 112K	6.8meg	0 0	0 0	0 0	* 112K	6.8meg	0 0	7 0
V9	12AX7	* 174K	2.2meg	49K	18 0	18 0	* 174K	2.2meg	49K	7 0
V10	50EH5	33 0	470K	65 0	40 0	470K	* 152 0	* 123 0		
V11	50EH5	33 0	470K	60 0	18 0	470K	* 152 0	* 123 0		
V12	50EH5	33 0	470K	70 0	45 0	470K	* 152 0	* 123 0		
V13	50EH5	33 0	470K	45 0	16 0	470K	* 152 0	* 123 0		

* MEASURED FROM OUTPUT OF MA.
MEASURED FROM OUTPUT OF MG.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
= MEASURED IN "AM" POSITION.
■ MEASURED IN "FM-AFC" POSITION.



A Howard W. Sams CIRCUITRACE Photo — ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

STELLMAN
MODELS 603, 703

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough sweep generator output to provide a usable pattern on scope.
Suggested Alignment Tools: A1 thru A4 and A8 thru A15...GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A7, A16, A17, A18.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	(AM) Tuning gang fully open.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal	"	A7	Adjust for maximum deflection. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (B). Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	"	"	DC probe thru 1meg to point (C). Common to chassis.	A14	"
7.	"	"	"	DC probe to point (D). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (B). Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp. thru 27K to point (C). Low side to chassis.	A14	"
7.	"	"	"	Vert. amp. to point (D). Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminal.	96MC (Unmod.)	(FM) 96MC	DC probe to point (B). Common to chassis.	A16, A17, A18	Adjust for maximum deflection.

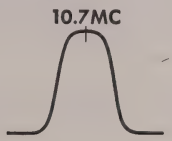


FIG. 1

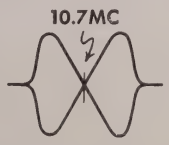


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -Mixer	ECC85/6AQ8	V5	2nd FM IF Amp. -AM Det. - AVC	6AU6
V2	FM Osc. -AFC	6BK7B(ECC85/6AQ8)*			
V3	AM Converter	6BE6	V6	FM Limiter	6AU6
V4	1st FM-AM IF Amplifier	6BA6	V7	Discriminator	6AL5

GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	150				PFP311.53		PCL-3443.5	
B	▲60	150							
C	60	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470		SI 470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C5	.68 10%		NPO-SI .68	TCZ-R68				
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C8	1-10			829-10				
C9	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C10	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C11	10 N2200					*		
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C14	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C15	47 N5600					*		
C16	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C17	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C18	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	.05 200V		P215IN-047	DD-503	BC2S47J	4DP-3-503	ACE-6147	2SE-S47
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	47 N750		N750-DI 47	DTN-47	C10Q47C	CCTN-470	CN7-447	10TCU-Q47
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C27	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP-347	10TS-T47
C28	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP-347	10TS-T47
C29	.05 200V		P215IN-047	DD-503	BC2S47J	4DP-3-503	ACE-6147	2SE-S47
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	2000	Note 1	BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20

Note 1. Not used in some versions.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R1	68Ω		R9	1000Ω		R17	1000Ω	
R2	3.3meg		R10	22K		R18	100K	
R3	15K		R11	3300Ω		R19	10K	
R4	22K		R12	1meg		R20	15K	
R5	6800Ω		R13	2.2meg		R21	100K	
R6	100Ω		R14	220K		R22	100K	
R7	470K		R15	1000Ω		R23	33K	
R8	47K		R16	1000Ω		R24	33K	

RESISTORS (IRC or EQUIVALENT) (cont)

ITEM No.	RATING	REMARKS
R25	2.2meg	
R26	330Ω	

ITEM No.	RATING	REMARKS
R27	330Ω	

ITEM No.	RATING	REMARKS
R28	33Ω	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	STEELMAN PART No.	REPLACEMENT DATA	
K1	AM Det. RF Filter	150mmf, 150mmf, 47K		Aerovox	PA-98
				Centralab	PC-51
				Cornell-Dubilier	111TM2
				Sprague	D-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA STEELMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	FM Ant. Coil			4584	RTC-8512	.24uh
L2	RF Choke		BC-564	4608	RTC-8518	3.3uh
L3	FM RF Coil					
L4	FM Mixer Coil					
L5	FM Osc. Coil					
L6	Cathode Choke		BC-561	4602	RTC-8515	1uh
L7	RF Choke		BC-564	4608	RTC-8518	3.3uh
L8	1st FM IF Trans.			1463-PC	RTC-9046	
L9	Loopstick		BC-419	705-A		
L10	AM Osc. Coil					
L11	1st AM IF Trans.		BC-356	13-PC1	RTC-8641	
L12	2nd FM IF Trans.			1463-PC	RTC-9046	
L13	2nd AM IF Trans.		BC-357	13-PC2	RTC-8642	
L14	3rd FM IF Trans.			1463-PC	RTC-9046	
L15	Discriminator					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	REPLACEMENT DATA STEELMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .28A	130V@ .045A Tap@ 6.3V@ 2.3A						

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA STEELMAN PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.045A		1N1763②	75①	SR200②	① Selenium Type ② Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M2	Tuning Cap.		FM-AM, 6 Gang
M3	Switch		Function, Power On-Off (Rotary Wafer Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V8	Channel A AF Amp. - Channel B AF Amp.	12AX7	V10	Channel A Output	50EH5
V9	Channel A Phase Inv. - Channel B Phase Inv.	12AX7	V11	Channel A Output	50EH5
			V12	Channel B Output	50EH5
			V13	Channel B Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C33A	80	150	583021	PR4-250	BBRQ0926.5	WQ410	TDLD-13	TVAS-2459 *	
B	80	150					TD-20-150	TVA-1418	
C	20	150							
C34	10	150	581053	PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	①
C35	4	50NP	581043	PRS7405	BBR4-150	TCN504		TVANS-1302.5*	②
C36	4	50NP	581043	PRS7405	BBR4-150	TCN504		TVANS-1302.5*	②

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Some versions may use 40mfd@150V in this application (Part #581004).
② Some versions may use 2mfd 50NP in this application (Part #581018).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

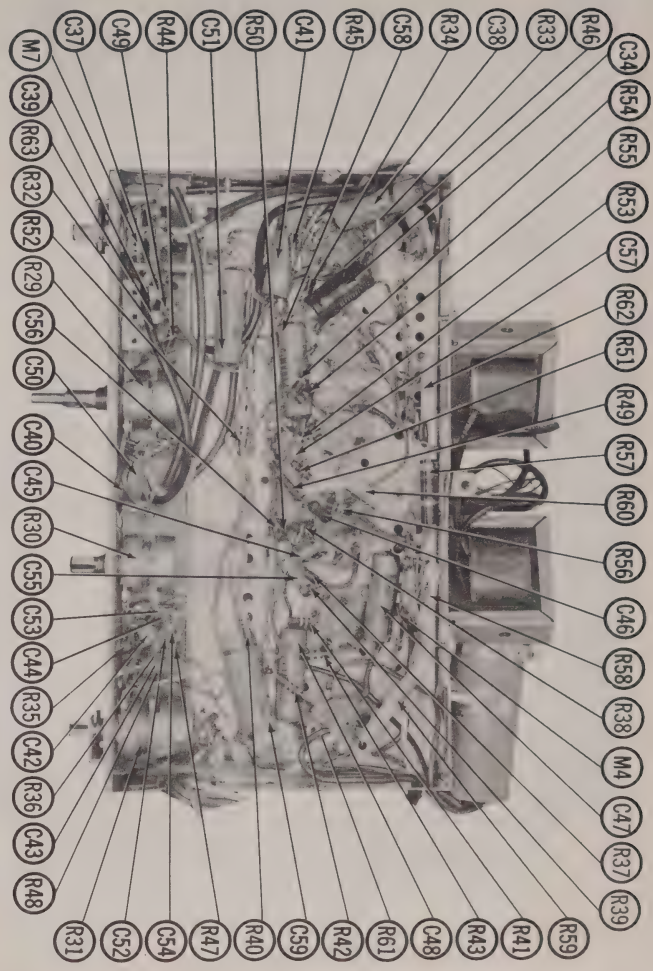
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C37	50000		BPD-05	DD-503	CUB2S5	DP-2-503	GP150	5HK-S50
C38	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C39	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C42	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C43	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C47	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C48	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C49	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C50	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C51	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C52	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C53	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C54	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C55	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C56	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C57	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C58	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C59	.1 400V	(.05) †	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R29A	500K 150K Tap	1/2	368073					Volume, Channel A
B	500K 150K Tap	1/2						Balance, Channel B
R30A	1meg	1/2	368074	B-69	AD47-1meg-S		FA16L	Bass, Channel A
B	1meg	1/2		SR-69	Not Req.		RU16L	Bass, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R31A	1meg	1/2	368072	B-69	AD47-1meg-S		FA16L	Treble, Channel A
B	1meg	1/2		SR-69	Not Req.		RU16L	Treble, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	Power Off-On

AMP CHASSIS—BOTTOM VIEW



AMP PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R32	47K	
R33	6.8meg	
R34	100K	
R35	100K	
R36	22K	
R37	2.2meg	
R38	47K	
R39	2000Ω	
R40	47K	
R41	470K	
R42	470K	

ITEM No.	RATING	REMARKS
R43	33Ω	
R44	47K	
R45	6.8meg	
R46	100K	
R47	100K	
R48	22K	
R49	2.2meg	
R50	47K	
R51	2000Ω	
R52	47K	
R53	470K	

ITEM No.	RATING	REMARKS
R54	470K	
R55	33Ω	
R56	27K	
R57	470Ω 5W	IRC#PW5-470Ω
R58	50Ω 5W	IRC#PW5-50Ω
R59	25Ω 10W	Pt. #510037 IRC#FR-25Ω
R60	47Ω 5W	IRC#PW5-47Ω
R61	47Ω 5W	IRC#PW5-47Ω
R62	47Ω 5W	IRC#PW5-47Ω
R63	27K	

TRANSFORMER (INPUT)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	STEELMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1	1	430584					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	STEELMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	5900Ω CT	8Ω CT 3-4Ω	430583					
T4	5900Ω CT	8Ω CT 3-4Ω	430583					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	408001	8A31	
SP2	4"	PM	3-4Ω	404022	4A1	
SP3	4"	PM	3-4Ω	404022	4A1	
SP4	8"	PM	3-4Ω	408001	8A31	
SP5	4"	PM	3-4Ω	404022	4A1	
SP6	4"	PM	3-4Ω	404022	4A1	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	STEELMAN PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M4	.150A	380020	1N1764	2F4	SR200	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	STEELMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M5		85-TS-TE		26S	S1-1 S3-3			8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	STEELMAN PART No.	JENSEN PART No.	
M6		CRA-57 † or CRA-57D ♦ & CRA-57X† or CRA-57XD ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M7	Switch	370062	Function Selector (Includes Off-On) (Rotary Type)
M8	Switch	370058	Int.-Ext. Stereo (DPDT Slide Type)

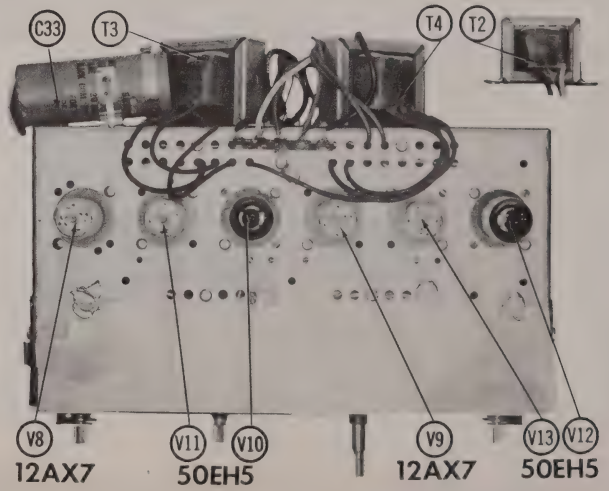
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	272350	With Indicator, Bass Trebie, Function (Amplifier)
Knob	272351	Lower, Dual, Balance (Amplifier)
Knob	272352	Upper Dual, Volume (Amplifier)
Knob	272353	Tuning
Knob	272354	Function, Tuner, Model 703
Cabinet	211340	Mahogany, Model 703
Cabinet	211341	Limed Oak, Model 703
Cabinet	211342	Walnut, Model 703
Cabinet	211290	Mahogany, Model 603
Cabinet	211291	Limed Oak, Model 603
Cabinet	211292	Walnut, Model 603

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

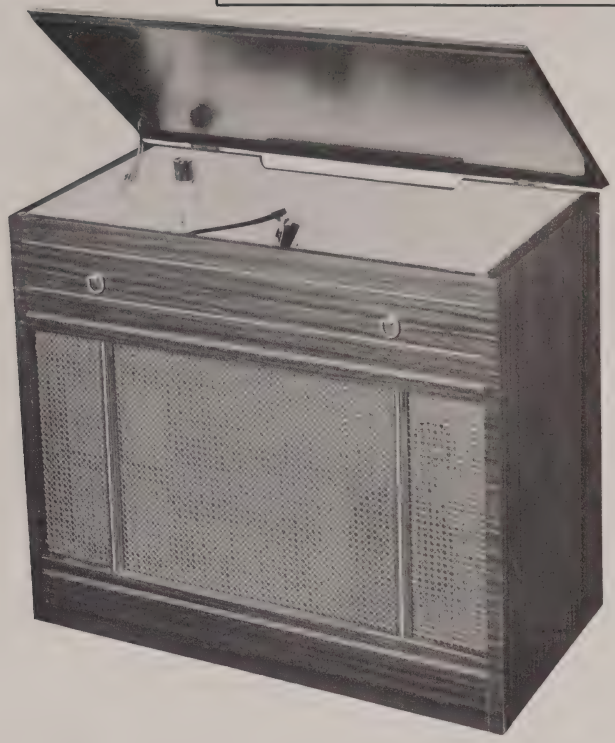


AMP CHASSIS—TOP VIEW

PHOTOFACT® Folder

SYLVANIA MODELS
55C13 Series (Ch.1-648-1)

SYLVANIA MODELS
55C13 Series (Ch.1-648-1)

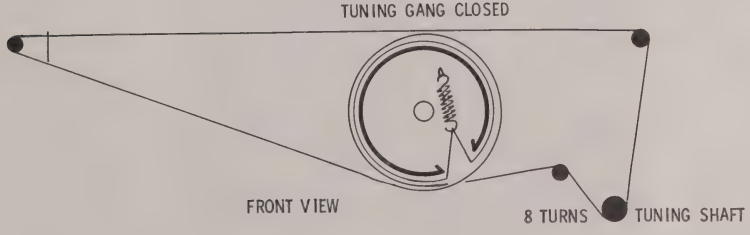


SYLVANIA MODELS
55C13 Series (Ch.1-648-1)

TRADE NAME	Sylvania Model 55C13 Series (Ch. 1-648-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products Inc., 700 Ellicott Street, Batavia, N. Y.
TYPE SET	AC Operated 12 Tube FM-AM Receiver With Stereo Amplifier And 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles — RATING 100 Watts, .9 Amp. @ 117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	540 — 1650KC — FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M 1201 - PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KN262

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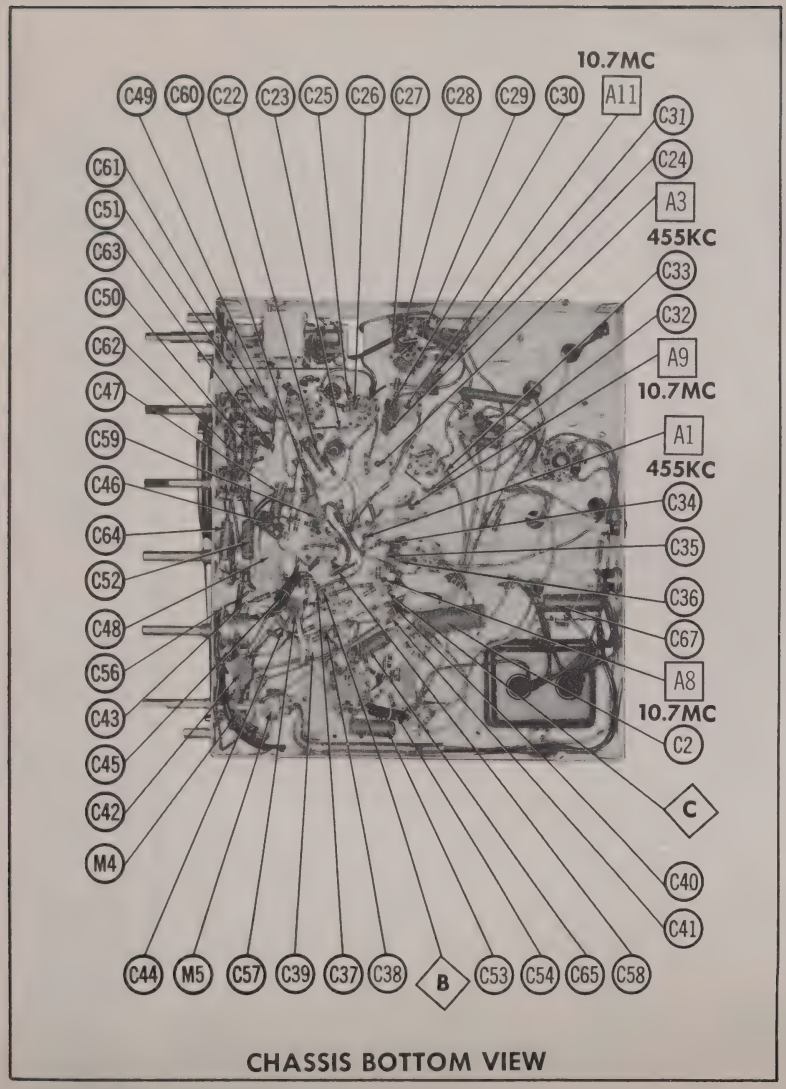
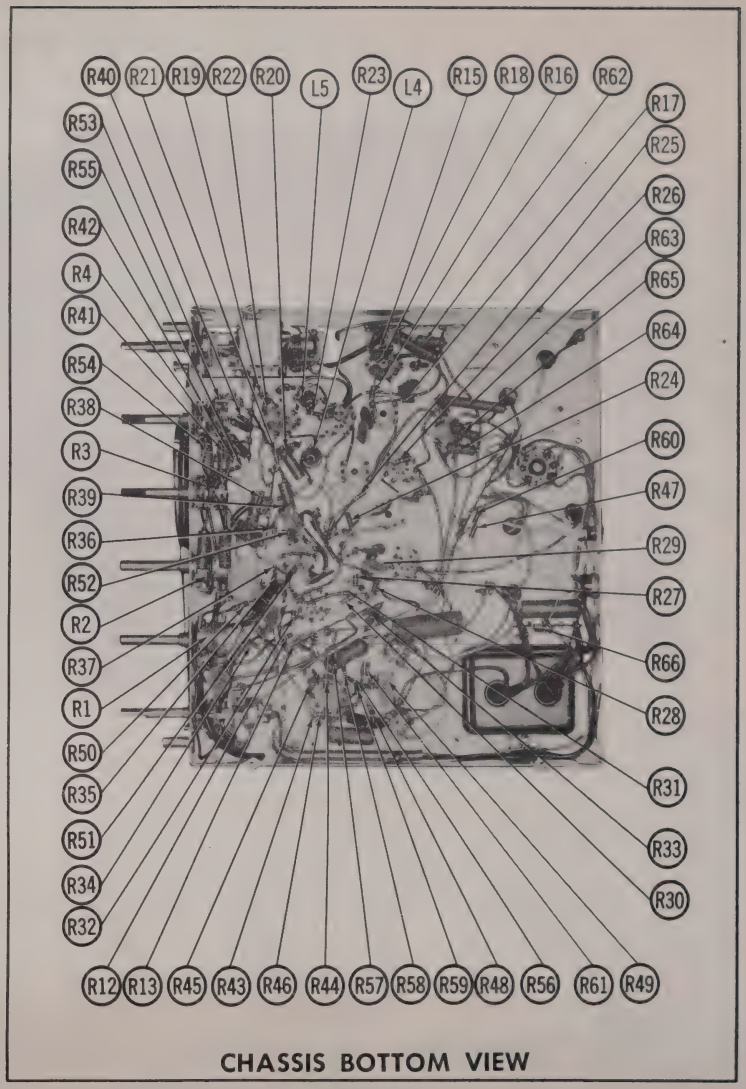
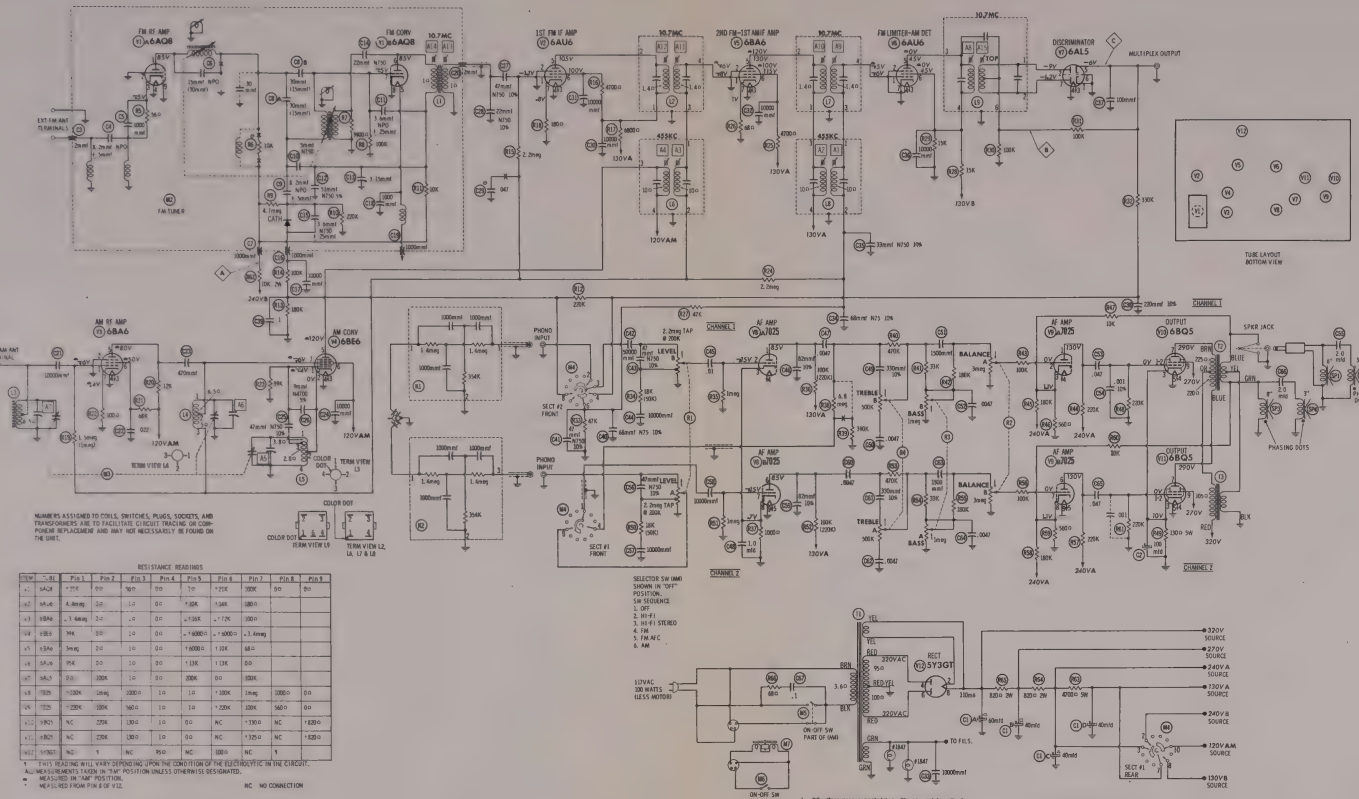
SET 514 FOLDER 13



CHASSIS BOTTOM VIEW



CHASSIS BOTTOM VIEW



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE CHART.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
x1	6AQ8	*270	0Ω	780Ω	0Ω	1Ω	*270Ω	100K	0Ω	0Ω
x2	6AQ8	4.4meg	2Ω	1Ω	0Ω	*10K	1.5MK	180Ω		
x3	6BA6	1.4meg	2Ω	1Ω	0Ω	1.5MK	*72K	100Ω		
x4	6BE6	1MK	0Ω	1Ω	0Ω	*160KΩ	*160KΩ	1.4meg		
x5	6BA6	1meg	0Ω	1Ω	0Ω	*160KΩ	10K	68Ω		
x6	6AU6	1MK	0Ω	1Ω	2Ω	*11K	11K	0Ω		
x7	6AL5	0Ω	100K	1Ω	0Ω	200K	0Ω	100K		
x8	7N7	*100K	1meg	1000Ω	1Ω	1Ω	*100K	1meg	1000Ω	0Ω
x9	7N7	*220K	100K	560Ω	1Ω	1Ω	*220K	100K	560Ω	0Ω
x10	6BQ5	NC	220K	130Ω	1Ω	0Ω	NC	*130Ω	NC	*130Ω
x11	6BQ5	NC	220K	130Ω	1Ω	0Ω	NC	*130Ω	NC	*130Ω
x12	5Y3GT	NC	1	NC	95Ω	NC	100Ω	NC	1	

* THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
∞ MEASURED IN "AM" POSITION.
* MEASURED FROM PIN 8 OF V12.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. * Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SYLVANIA MODELS 55C13 Series (Ch.1-648-1)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:
- A1 thru A4.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989; WALSCO #2515, 2531, 2532
- A5, A6, A7.....GENERAL CEMENT #5004, 5008, 5009; WALSCO #2520
- A8 thru A12, A15..GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440; WALSCO #2526, 2543, 2544, 2545
- A13, A14.....GENERAL CEMENT #9296, 9297; WALSCO #2546, 2547

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 470Ω to external antenna terminal. Low side to chassis.	1620KC	"	"	A5	"
3.	"	1400KC	1400KC Signal.	"	A6, A7	Adjust for maximum output. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to point Ⓐ. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓑ. Common to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to point Ⓐ. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. thru 47K to point Ⓑ. Low side to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FIG. 1

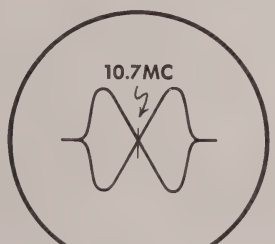
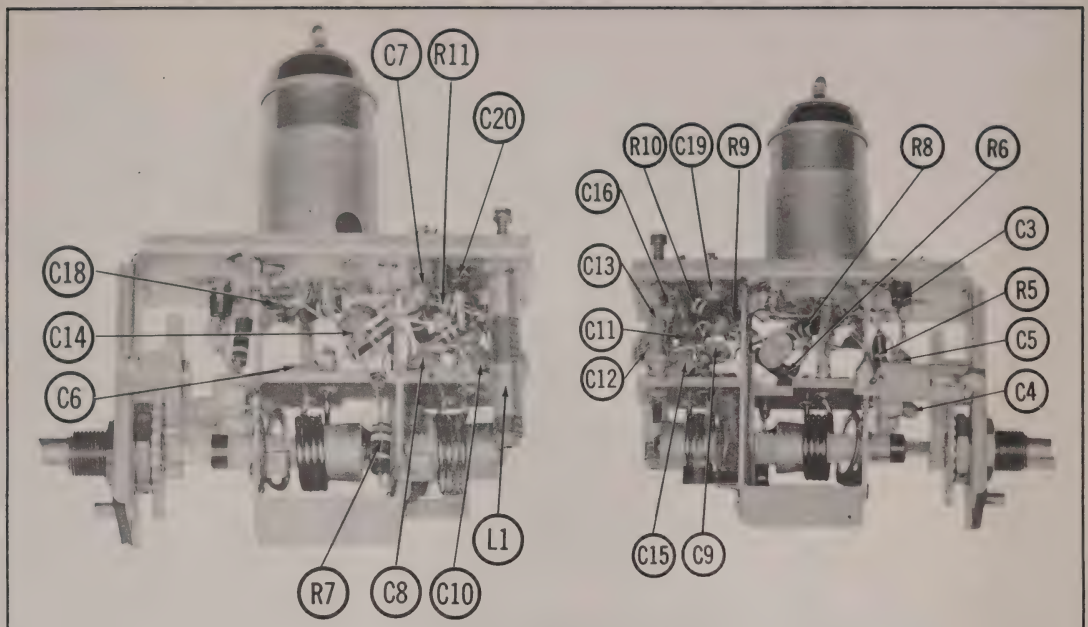
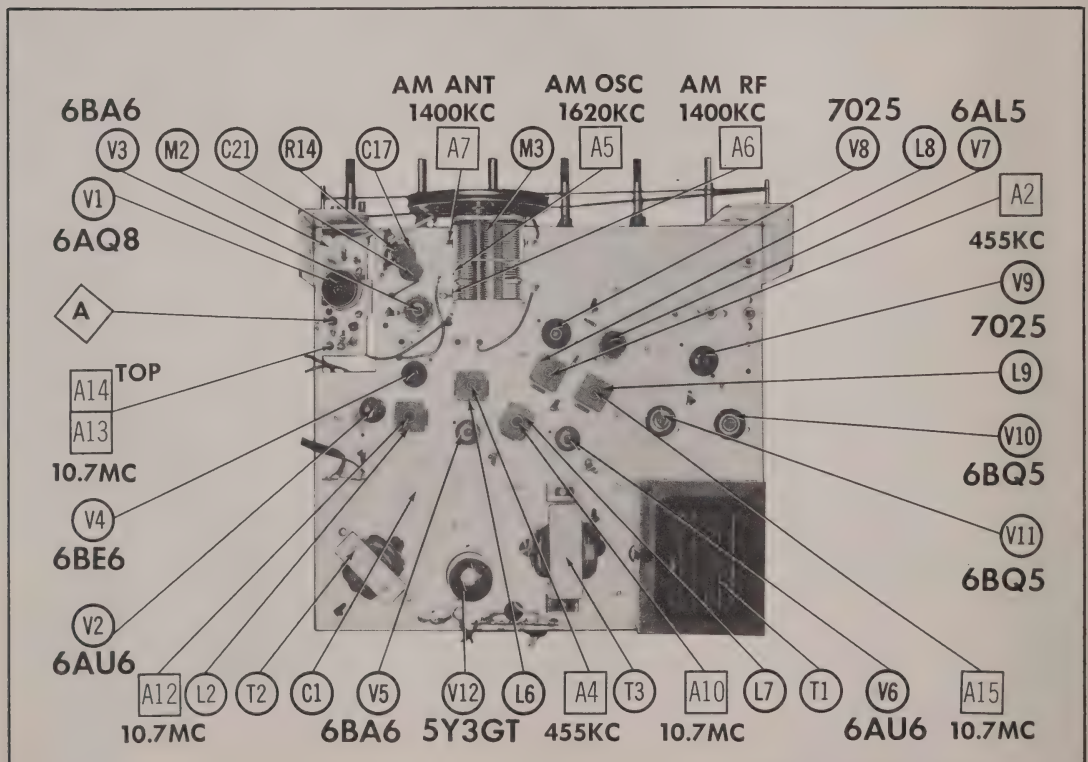


FIG. 2



FM RF SUBCHASSIS



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amp. -FM Conv.	6AQ8
V2	1st FM IF Amplifier	6AU6
V3	AM RF Amplifier	6BA6
V4	AM Converter	6BE6
V5	2nd FM -1st AM IF Amp.	6BA6
V6	FM Limiter-AM Det.	6AU6
V7	Discriminator	6AL5
V8	Channel 1 AF Amp. Channel 2 AF Amp.	7025
V9	Channel 1 AF Amp. - Channel 2 AF Amp.	7025
V10	Channel 1 Output	6BQ5
V11	Channel 2 Output	6BQ5
V12	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	400	161-4032	AFH4-18-45	C0350	FP377	TMT-3748	TVL-3787	
B	■40	400			BR6045	TC795	TD-80-450	TVA-1714	
C	▲40	400							
D	40	400							
C2	100	25	161-1066	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	2	#169-0053						
C4	8.2 NPO ± .5mmf		NPO-DI 8.2		C10V82C			10TCC-V82
C5	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C6	15 NPO	(30) †	NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C7	1000		EF-001	MFT-1000		CCF-102	CT280A	
C8A	30	(15) †	DI-30	DD-300	L10Q3	CCD-300	GP430	5GA-Q30
B	30	(15) †	DI-30	DD-300	L10Q3	CCD-300	GP430	5GA-Q30
C9	8.2 NPO ± .5mmf		NPO-DI 8.2					10TCC-V82
C10	5 N750			DTN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50
C11	3.6 NPO ± .25mmf	#168-0074						
C12	51 N750 5%	#168-0099		TCN-51				
C13	3-15	#172-0060						
C14	22 N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C15	3.6 N750 ± .25mmf	#168-0098						
C16	1000		EF-001	MFT-1000		CCF-102	CT280A	
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C19	1000		EF-001	MFT-1000		CCF-102	CT280A	
C20	2	#169-0053						
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C22	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C23	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	5GA-T47
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C25	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C26	9 N4700 5%							
C27	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C28	22 N750 10%		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C29	.047 200V	Note 1	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C34	68 N75 10%							
C35	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C37	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	5GA-T10
C38	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C39	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C40	68 N75 10%							
C41	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C42	50000			DD-503			GP150	5HK-S50
C43	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C45	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C46	82 10%		1469-000082	DTZ-82	22R5Q82	CM-20B-820K		MS-482
C47	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C48	1.0 100V		P288N-1.0		CUB2W1	1DP-5-105	GEM-21	2TM-M1
C49	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C50	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C51	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C52	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C53	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C54	.001 100V 10%		V84C6D1-10%	DD-102	WMF1D1E	6DP-1-102	GEM-1621	6TM-D10
C55	2.0 50V	#169-0031	P282Z-2.0		WMF1W2E			
C56	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCUQ47
C57	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C58	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C59	82 10%		1469-000082	DTZ-82	22R5Q82	CM-20B-820K		MS-482
C60	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C61	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C62	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C63	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C64	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C65	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C66	2.0 50V	#169-0031	P282Z-2.0		WMF1W2E			
C67	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

Note 1. Not used in some versions.
Sylvania Part Number.
† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2.2meg 200K Tap	½	153-0231	BT-174 *				Level, Channel 2
B	2.2meg 200K Tap	½		STR-174 *				Level, Channel 1
R2A	3meg	½	153-0232				FA36A	Balance, Channel 1
B	3meg	½					RU36R	Balance, Channel 2
C	Shaft						CS3500	
R3A	1meg	½	153-0230	B-70	AD47-1meg-Z		FA16A	Bass, Channel 2
B	1meg	½		SR-70	Not Req.		RU16A	Bass, Channel 1
C	Shaft			Not Req.	FS-3		CS3500	
R4A	500K	½	153-0229	B-60	AD47-500K-Z		FA55A	Treble, Channel 2
B	500K	½		SR-60	Not Req.		RU55A	Treble, Channel 1
C	Shaft			Not Req.	FS-3		CS3500	

* Omit Tap 2.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	56Ω	
R6	10K	Note 1
R7	3400Ω	
R8	100K	
R9	4.7meg	
R10	220K	
R11	10K	
R12	220K	
R13	180K	
R14	100K	
R15	2.2meg	
R16	4700Ω	
R17	6800Ω	
R18	180Ω	
R19	1.5meg	(1meg) *
R20	12K	
R21	68K	
R22	100Ω	
R23	39K	
R24	2.2meg	
R25	4700Ω	
R26	68Ω	
R27	47K	
R28	15K	
R29	15K	
R30	100K	
R31	100K	
R32	330K	
R33	47K	
R34	18K	(50K) *
R35	1meg	
R36	100K	(220K) *
R37	1000Ω	
R38	6.8meg	
R39	390K	
R40	470K	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT) (cont)

ITEM No.	RATING	REMARKS
R41	33K	
R42	180K	
R43	100K	
R44	220K	
R45	180K	
R46	560Ω	
R47	10K	
R48	220K	
R49	130Ω 5W	IRC#PW5-130Ω

ITEM No.	RATING	REMARKS
R50	18K	(50K) *
R51	1meg	
R52	100K	(220K) *
R53	470K	
R54	33K	
R55	180K	
R56	100K	
R57	220K	
R58	180K	

ITEM No.	RATING	REMARKS
R59	560Ω	
R60	10K	
R61	220K	
R62	10K 2W	
R63	4700Ω 5W	IRC#PW5-4700Ω
R64	820Ω 2W	
R65	820Ω 2W	
R66	68Ω	

* Alternate Value.

Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA
K1	Rumble Filter	(3) 10000mmf, (2) 1.4meg	190-0052	
K2	Rumble Filter	(3) 10000mmf, (2) 1.4meg	190-0052	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SYLVANIA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	1st FM IF Trans.	118-0065				
L2	2nd FM IF Trans.	122-0039	FM-254	1463	RTC-8599	
L3	Loopstick	581-0024	BC-419	705-A		
L4	AM RF Coil	125-0007				
L5	AM Osc. Coil	113-0081	BC-394	71-OSC	RTC-8647	
L6	1st AM IF Trans.	121-0112	BC-352	12-C1	RTC-8632	
L7	2nd FM IF Trans.	122-0039	FM-254	1463	RTC-8599	
L8	2nd AM IF Trans.	121-0112	BC-353	12-C2	RTC-8633	
L9	Discriminator	128-0017	FM-253	1464	RTC-8665	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .9A	620VCT ⓐ .110A	5V ⓐ 2A	141-0086		P-8177 ①②	22R-5 ①		
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ⓐ 4.8A								

① Tape Center Tap On 6.3V Winding.
② Drill New Mounting Holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3300Ω	3-4Ω	143-0092					
T3	5000Ω CT	3-4Ω CT	143-0093					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	539-0611	6A21	
SP2	3"	PM	6-8Ω	539-0301	3A15TZ6.8	
SP3	8"	PM	3-4Ω	539-0813	8A31	
SP4	3"	PM	6-8Ω	539-0301	3A15TZ6.8	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	SYLVANIA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1			13T	Not Req.	13	Not Req.	10T2-S	Not Req.	

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	Tuner	170-0047	FM (Includes AFC Diode)
M3	Tuning Cap.	170-0048	AM, 3 Gang (Ant. 39-515mmf, RF12-204mmf, Osc. 13-80mmf)
M4	Switch	573-0025	Selector (Rotary Wafer Type)
M5	Switch	571-0036	Power (Part of M4)
M6	Switch		Off-On (Part of Changer)
M7	Motor		Turntable Drive (Part of Changer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	721-0039	
Dial Pointer	792-0031	
Knob	740-0340	Tuning
Knob	740-0310	Level, Bass, Treble, Balance, Selector

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE*

**TOSHIBA
MODEL 6TP-357**

TOSHIBA
MODEL 6TP-357

TOSHIBA
MODEL 6TP-357

TRADE NAME	Toshiba Model 6TP-357
IMPORTER	Transistor World Corp., 52 Broadway, New York 4, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	4.5 Volts DC RATING 5MA@4.5 Volts DC (No Signal, Min. Volume) 14MA@4.5 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	530 — 1680KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an outpur reading.

Suggested Alignment Tools: A1, A2, A3, A4..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5, A7..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully closed.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	530KC	"	"	A4	"
3.	"	1680KC	Tuning gang fully open.	"	A5	Adjust for maximum output. Repeat Steps 2 and 3.
4.	"	600KC	600KC Signal .	"	A6	Adjust for maximum output.
5.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 4 and 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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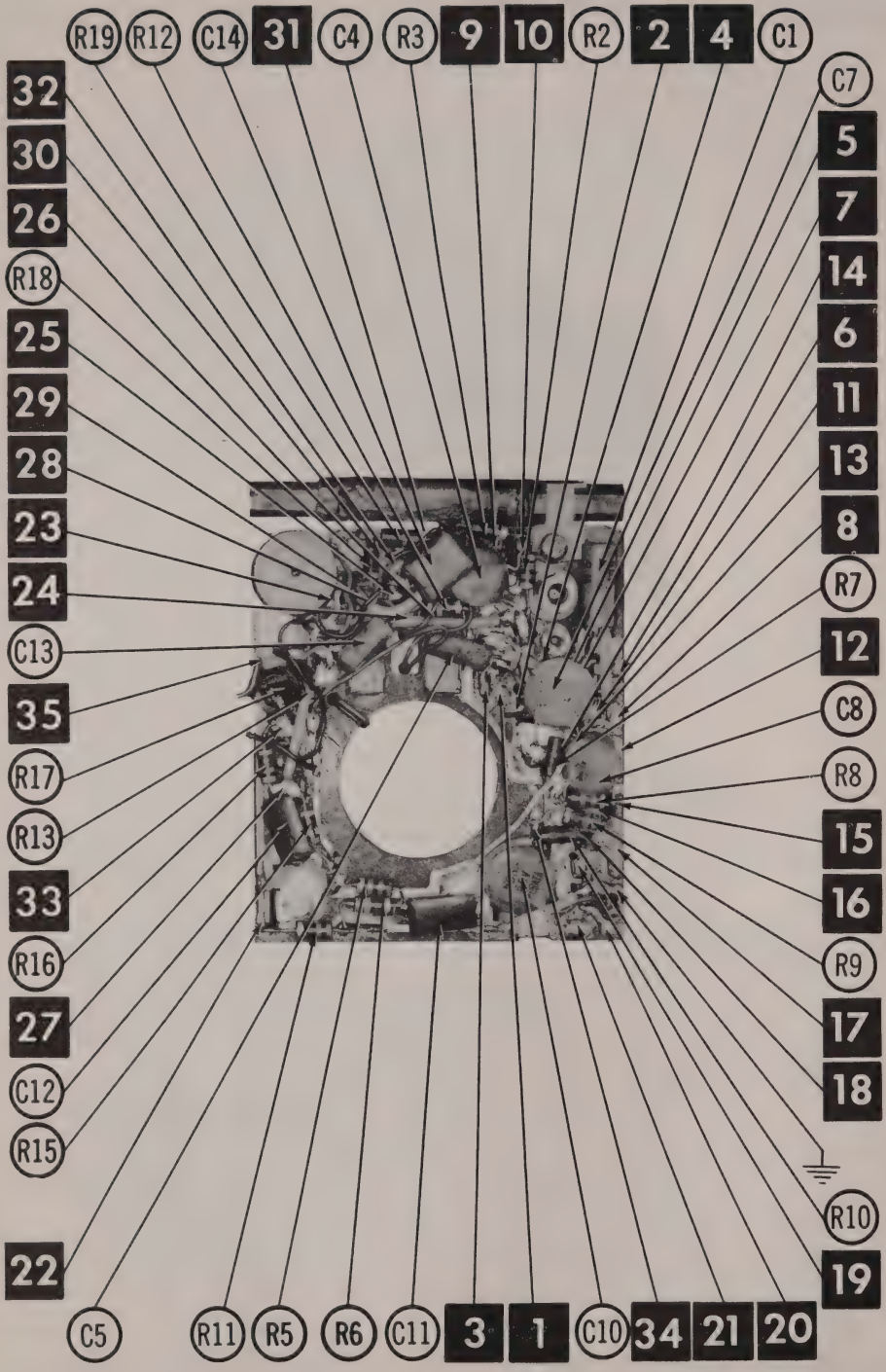
SET 514 FOLDER 14



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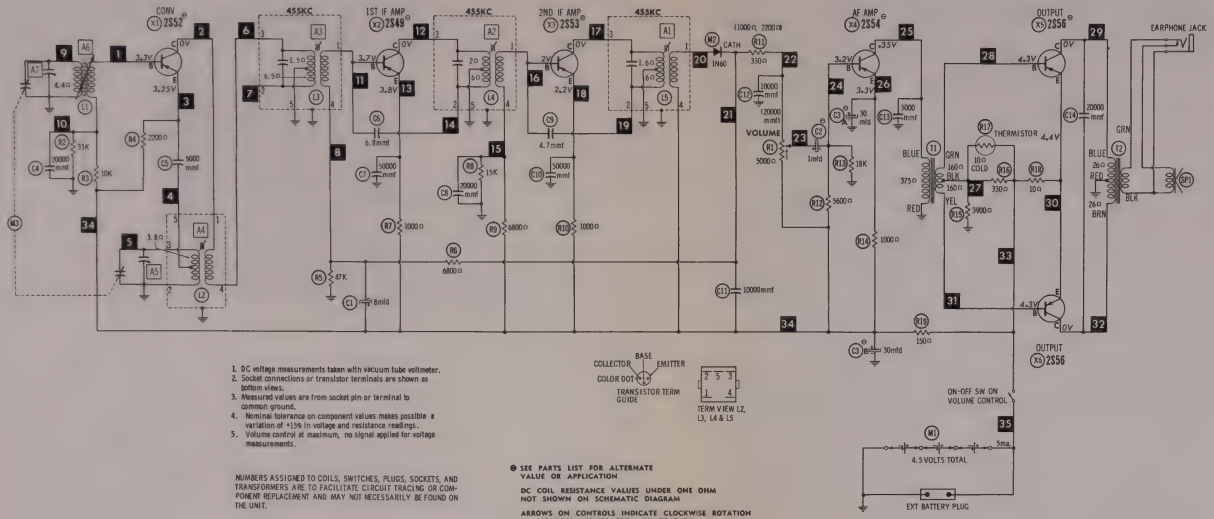
PRINTED BOARD



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

COLLECTOR BASE EMITTER
COLOR DOT
TRANSISTOR TERM GUIDE

TERM VIEW L2, L3, L4 & L5

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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TOSHIBA
MODEL 6TP-357

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52①	Converter			2N411	PNP
X2	2S49②	1st IF Amplifier	2N410	2N483	2N410	PNP
X3	2S53③	2nd IF Amplifier	2N410	2N483	2N410	PNP
X4	2S54④	AF Amplifier	2N406	2N362	2N406	PNP
X5	2S56⑤	Output	2N408	2N632	2N408	PNP } Matched
X6	2S56⑤	Output	2N408	2N632	2N408	PNP } Pair

① Alternate Type 2SA52 may be used.
② Alternate Type 2SA49 may be used.
③ Alternate Type 2SA53 may be used.
④ Alternate Type 2SB54 may be used.
⑤ Alternate Type 2SB56 may be used.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TOSHIBA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	8	5	30515	XPP-6008	NLW8-6	TT6X8	ML8-6	TE-1086	①②
C2	1	10		XPP-10001	NLW1-50	TT12X1			
C3A	30	5							
B	30	5							

① Some versions may use 3V in this application (Part #30488).
② Some versions may use two 60mfd in this application (Part #30516).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S50
C5	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C6	6.8		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C7	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C8	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C9	4.7		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C10	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C11	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C12	10000	(20000) †	C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C13	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C14	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

† Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TOSHIBA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	40572	B16-214				Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	33K	
R3	10K	
R4	2200Ω	
R5	47K	
R6	6800Ω	
R7	1000Ω	

ITEM No.	RATING	REMARKS
R8	15K	
R9	6800Ω	
R10	1000Ω	
R11	330Ω	(1000Ω, 2200Ω)*
R12	5600Ω	
R13	18K	

ITEM No.	RATING	REMARKS
R14	1000Ω	
R15	3900Ω	
R16	330Ω	
R17	10Ω Cold	Pt. #40250
R18	10Ω	
R19	150Ω	

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		TOSHIBA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	20377				
L2	Osc. Coil	20378				
L3	1st IF Trans.	20379				
L4	2nd IF Trans.	20380				
L5	3rd IF Trans.	20381				

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TOSHIBA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.2	1	20382					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TOSHIBA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	650Ω CT	6-8Ω	20383						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TOSHIBA PART No.	QUAM PART No.	
SP1	2"	PM	6-8Ω	50114		

BATTERIES

ITEM No.	VOLTAGE	TOSHIBA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-5①		N①		904① E-401②		RM-401 ②	① 3 Required ② Mercury, 3 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TOSHIBA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60			1N60	1N60	Detector (Pigtail)

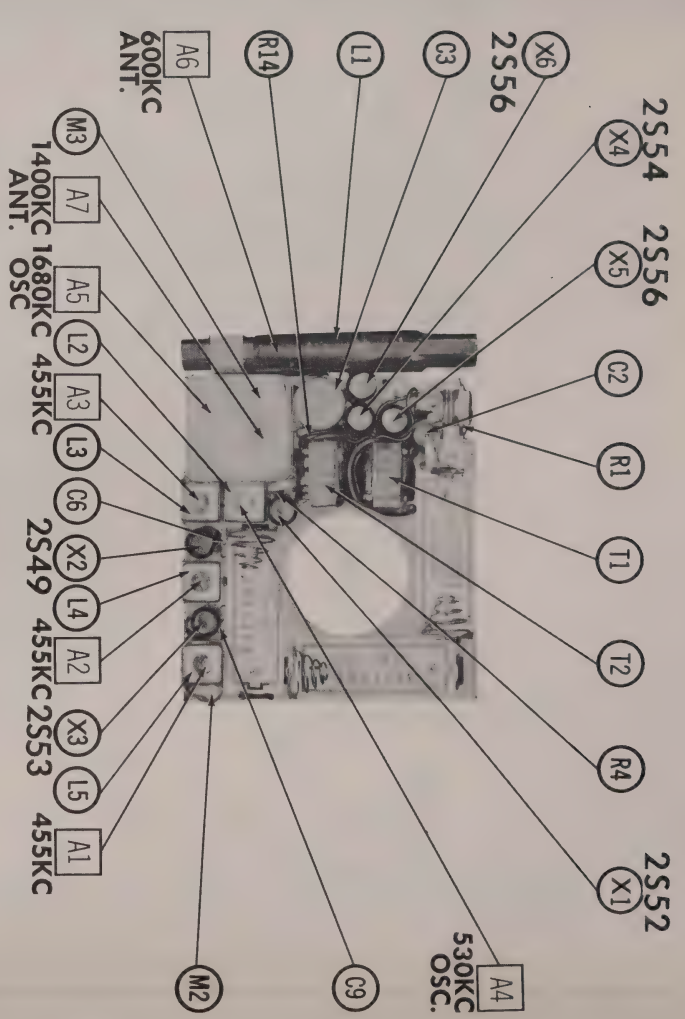
MISCELLANEOUS

ITEM No.	PART NAME	TOSHIBA PART No.	NOTES
M3	Tuning Cap.	30459	2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

ZENITH MODELS
XD50C, G, R, W (Ch. 5D12)

ZENITH MODELS
XD50C, G, R, W (Ch. 5D12)

ZENITH MODELS
XD50C, G, R, W (Ch. 5D12)

TRADE NAME	Zenith Models XD50C, XD50G, XD50R, XD50W (Ch. 5D12)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	110 - 120 Volts AC-DC RATING 27 Watts, .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A6...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .5mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	600KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal	"	A7	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KG230

SET 514 FOLDER 15

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det.-AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	22-3216	PRS2230	BBRD8415	TCD4975	TDLD-11	TVA-2461	
B	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C3	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C6	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	1/2	63-4655	B-69	A47-1meg-S	Q11-137	U54	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On

RESISTORS (IRC or EQUIVALENT)

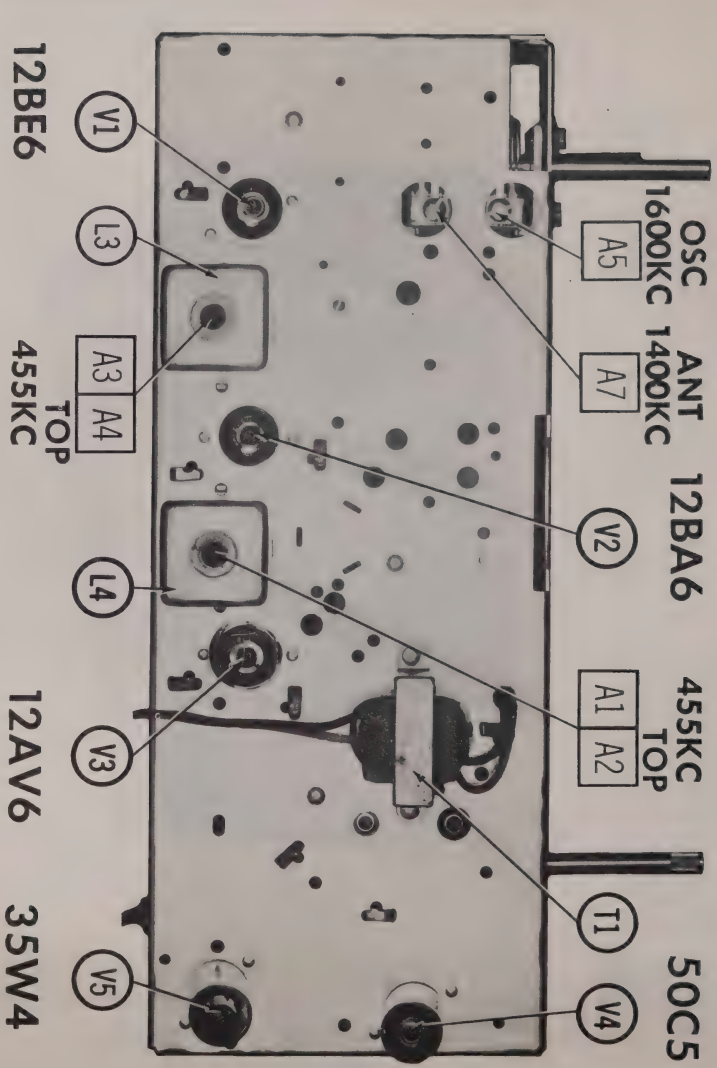
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2.2meg	
R3	22K	
R4	68Ω	
R5	1000Ω	

ITEM No.	RATING	REMARKS
R6	2200Ω	
R7	4.7meg	
R8	470K	
R9	470K	

ITEM No.	RATING	REMARKS
R10	150Ω	
R11	1000Ω 1W	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loop Ant.	S-47893				
L2	Osc. Coil	S-47912	BC-394	71-OSC	RTC-8646	
L3	Input IF Trans.	95-1101	BC-368	12-C1 *	RTC-8632 *	
L4	Output IF Trans.	95-1102	BC-355	12-C6 *	RTC-8634 *	

* Remove center bolt mounting plate and use adapter plate.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2100Ω	3-4Ω	95-1704	A-3025	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	49-823	46A1	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M1	Tuning Cap.	22-3215	2 Gang (Ant. 17-354mmf, Osc. 12-102mmf)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

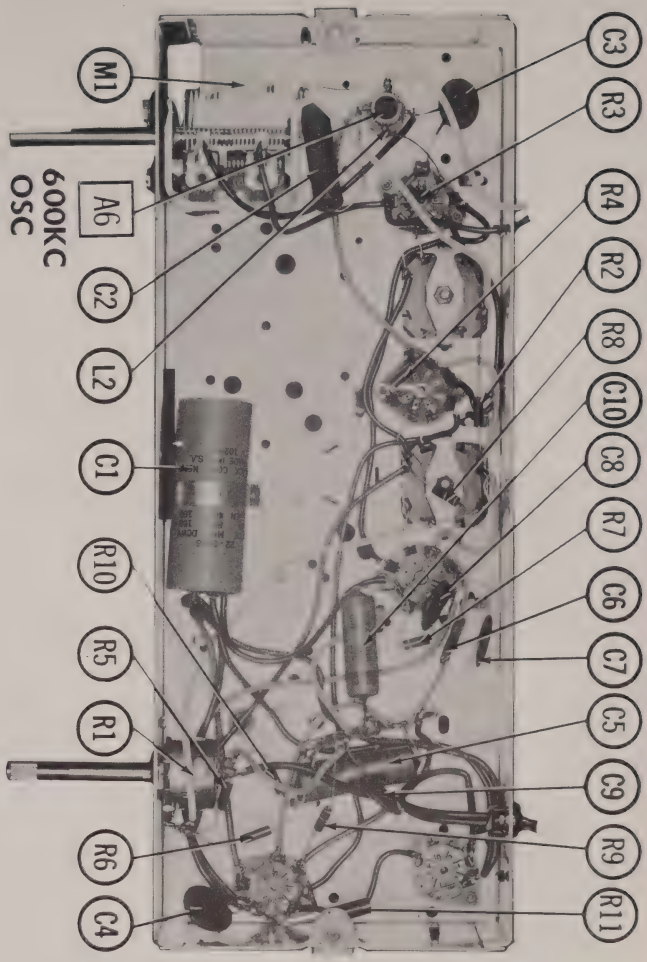
NAME	PART NO.	DESCRIPTION
Dial Scale	26-664	
Knob Ass'y.	S-47901	Tuning And Pointer, Models XD50G, XD50W, XD50C
Knob Ass'y.	S-47900	Tuning And Pointer, Model XD50R
Knob	46-2312	Volume, Model XD50R
Knob	46-2313	Volume, Models XD50G, XD50W, XD50C
Ring	188-231	Knob, Clamping
Cabinet	14-2866	Plastic, Model XD50R
Cabinet	14-2867	Plastic, Model XD50G
Cabinet	14-2868	Plastic, Model XD50W
Cabinet	14-2869	Plastic, Model XD50C

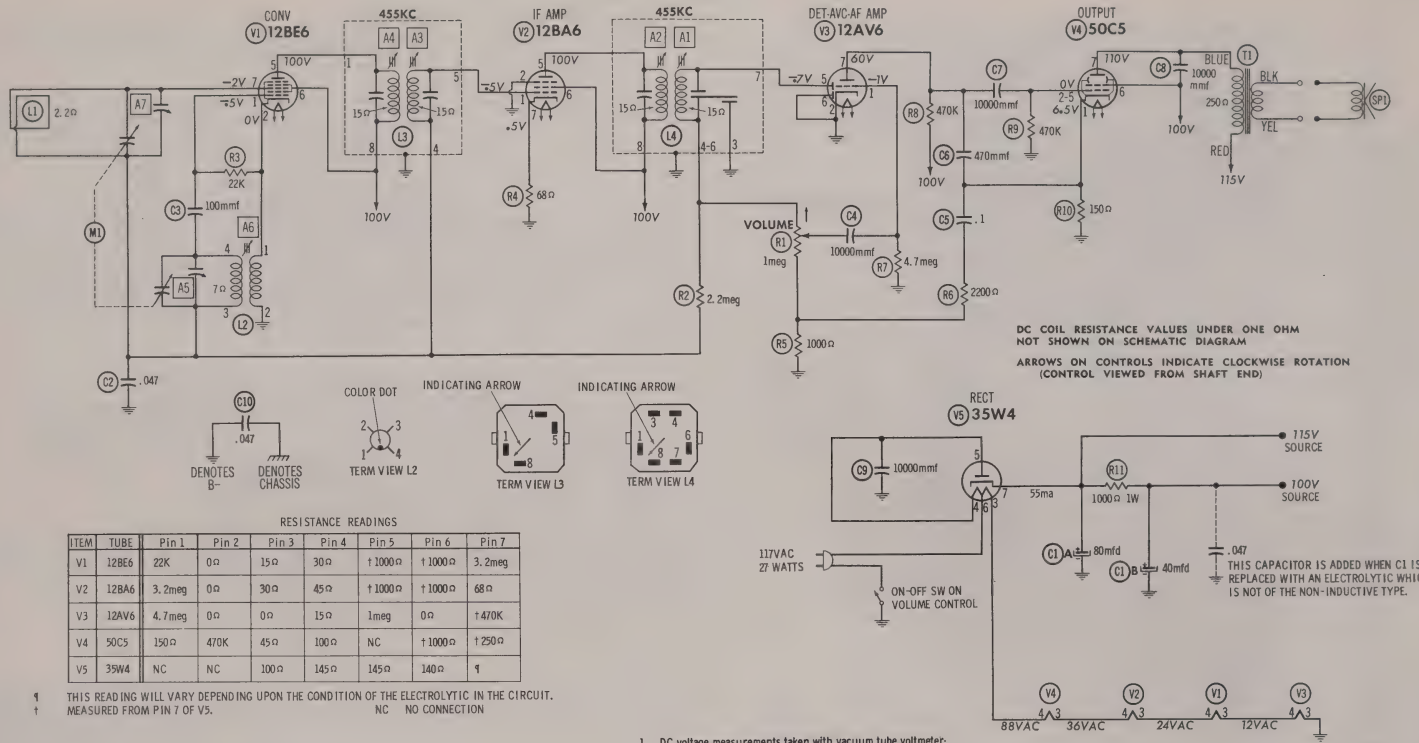
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

THIS CAPACITOR IS ADDED WHEN C1 IS REPLACED WITH AN ELECTROLYTIC WHICH IS NOT OF THE NON-INDUCTIVE TYPE.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	0Ω	15Ω	30Ω	†1000Ω	†1000Ω	3.2meg
V2	12BA6	3.2meg	0Ω	30Ω	45Ω	†1000Ω	†1000Ω	68Ω
V3	12AV6	4.7meg	0Ω	0Ω	15Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	45Ω	100Ω	NC	†1000Ω	†250Ω
V5	35W4	NC	NC	100Ω	145Ω	145Ω	140Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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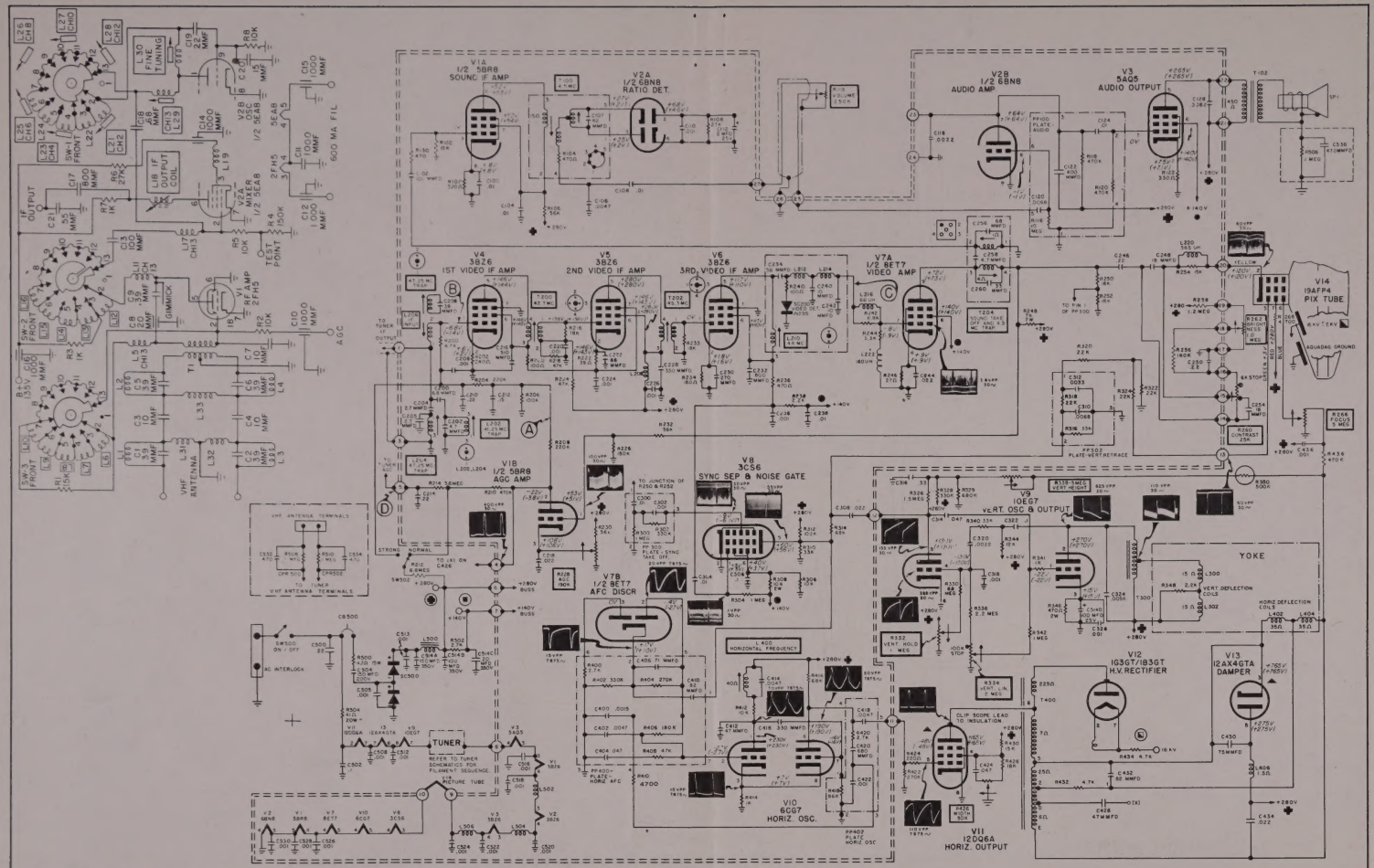
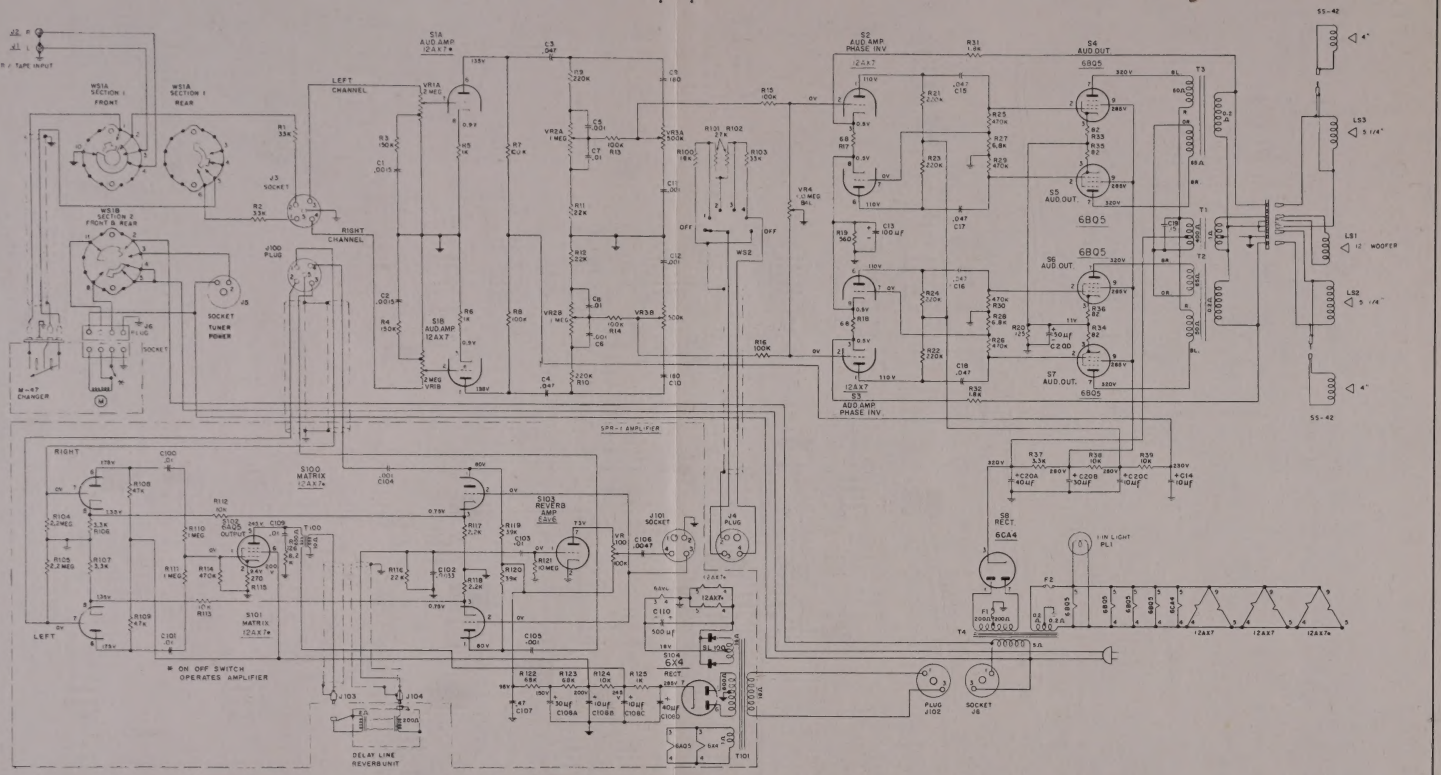
ZENITH MODELS
XD50C, G, R, W (Ch. 5D12)



SILVERTONE MODELS 122, 123, 124, 125, 126, 127 (CH. 101.60100, 101.60200)

Schematic Diagram Courtesy of Sears, Roebuck & Company



PHILCO MODEL J-1720R

Schematic Diagram Courtesy of Philco Corporation

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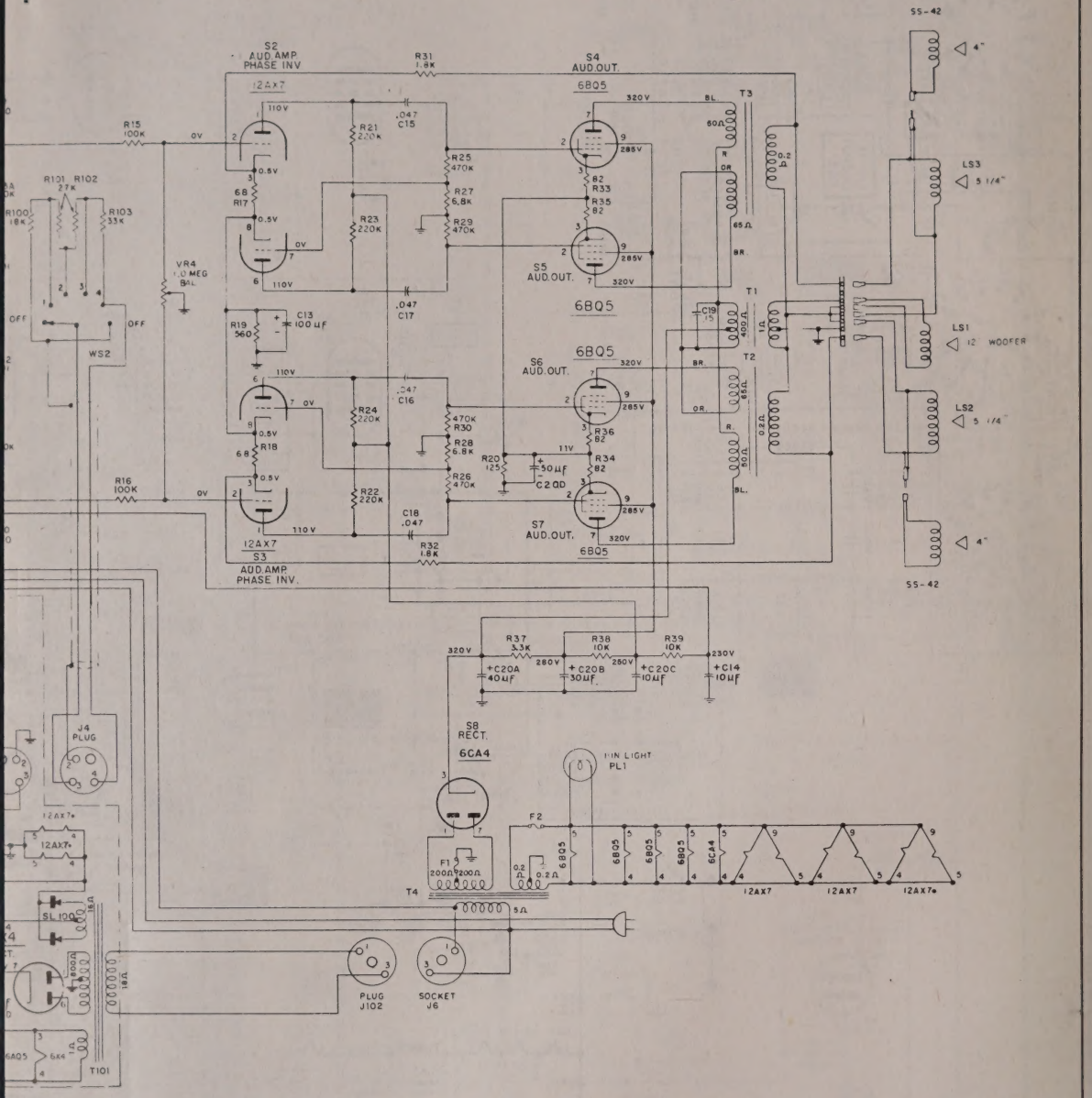

Schematic Diagram Courtesy of Philco Corporation